

# Radio Control **CAR ACTION**

THE WORLD'S LEADING R/C CAR MAGAZINE

February 1997

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**Bug Bomb!**  
**Gas Power** Kyosho's amazing  
**with** Baja  
**REVERSE** Beetle  
pg. 48



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# Radio Control CAR ACTION

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ON THE COVER (top to bottom): Tamiya's 1/8-scale Porsche TGX body (photo by George M. Gonzalez); Kyosho's Field Baja Beetle (photo by John Howell); Trinity's X-Star motor (photo by Walter Sidas); an inside look into Nissan's 300ZX TV commercial (image courtesy of Will Vinton Studios).

THIS PAGE (top to bottom): Nissan go R/C with their 300ZX commercial (image courtesy of Will Vinton studios); action from Race #1 of the Kyosho World Challenge (photo by David Ditner); the new Traxxas nitro Rustler.



## EDITORIAL

# Car Action online!

**C**an't get enough R/C Car Action? Log on to our new website at <http://www.airage.com> for the latest info on upcoming issues, plus late-breaking product and event news that you won't find anywhere else. We've been working extra late to make sure that Car Action online stands out from those "shovelware"

sites that only duplicate what they publish in their mags. You deserve better!



## AND NOW, SOMETHING COMPLETELY DIFFERENT

After we published coverage of the second annual "Robot Wars" in last year's February issue, some people found enough spare time to write in to philosophize that Robot Wars "didn't relate to R/C cars" or that the event "promoted violence." In the 12 months since that issue, I haven't read about one single robot-related act of violence in the newspapers. As

far as I know, there aren't any marauding bands of C3PO clones with power lawn-trimmers where their hands used to be terrorizing unsuspecting Quickie-Mart employees.

I think that events such as the Robot Wars are the ultimate expression of the R/C car hobby and are a showcase for ingenuity and creativity. I can recall more than one time when I wished that my buggy had a retractable claw-arm to ward off track-hackers. "Mess with me, will you? I'll give you what for!" I'm actually thinking about building a combat robot out of spare R/C car parts and a few garden implements—just for fun, of course.

Events such as the Robot Wars serve to illustrate the diversity of the hobby. How boring would things be if everyone raced the same cars on the same tracks?

While we're on the subject of diversity, how about the Nissan commercial with the R/C 300ZX that's captured the imagination of the American viewing public? Contributing author Dominic Tuso just happened to know the guy who built and drove the diminutive Z-car for the filming of the commercial. Dominic gives us the skinny on this, along with some great still shots of its foot-tall hero and his wicked ride (see page 80).

## CAN'T GET ENOUGH PARKING LOT RACING?

If you like fast-paced racing action, you'll love this month's issue. We've included coverage of two events that embody the grass-roots racing movement: Hobby Shack's Race Connection Expo and Kyosho's World Cup. As you may know, Hobby Shack runs what is perhaps the most successful parking-lot racing series in the country. Their annual Expo brings together over 150 racers, hundreds of spectators and many of the nation's top R/C manufacturers.

Already extremely successful in Japan, Kyosho's World Cup race has made it to our shores and it looks like fun! Racers use Kyosho's cool little gas sedans or vintage cars, and the winners get an all-expense-paid trip to the Philippines to compete in the world championships. Contributing author David Ditner attended the first of the three U.S. World Cup races and reports that the event was, in his words, "Awesome, dude!"

Frank Masi, Executive Editor

# Radio Control CAR ACTION

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## Errata

In our coverage of the ROAR Off-Road Nats (January '97 issue), the winners' chart should have indicated that Scott Hughes, Mike Weed, Mark Pavidis and Gabe Boudreau ran Pro-Line rear tires in the 2WD class.

## "M" Acculate Mini

I read the "Project M" article in the Sept. '96 *R/C Car Action*. I am interested in building a car that's similar to the Kose M01 (except for body, I prefer the Tamiya Alpine). I don't have an on-road car. I race my Losi XX 'CR' in parking-lot races (Fantasy World Toy and Hobby in Tacoma, WA).

On to my questions. Did you start with a stock M-chassis car and add all the Kose parts listed in the article, or did you buy the hop-up items first, then order all the remaining stock M-chassis parts that were needed to complete the conversion afterward? If you started with a stock mini, which one did you use for the Kose M01?

Thanks for your help.  
DAVID LEISTER  
via email

David, I started out with a kit stock M01 (Mini Cooper). You'll have to buy the kit because the conversion can't be made without some of the stock parts. The Alpine body won't fit onto the M01 chassis. The front of the body is too low and won't clear the FWD setup. You can build a rear-wheel-drive Kose car and use the Alpine body, but you'll still have to pick up the Alpine rear body mounts as well because they are different from the body mounts that are included with all the M01 FWD cars. Good luck.

George

## Too Hot to Handle

I just have a quick question about removing off-road tires from their wheels. How long should I boil the tires? How long should I wait for the wheels to cool before I remove the tires and mount new ones? Thanks for your help.

GILBERT QUERIDO  
San Gabriel, CA

Gilbert, ten minutes is usually enough, but it may take a few minutes more, depending on how much CA you used to glue the tires onto the wheels. I just boil them until I can easily peel the tires off the wheels. Allow them to cool until you can touch the wheels without burning yourself. Good luck.

George

## Gear Down, Dude!

Thanks for the great magazine. In the Philippines, many people read it; the articles really help people like me pick out the right products for our cars. Currently, I have a Tamiya Egress with a Yokomo Twin Cam motor using Futaba's MC210CB ESC. Do you think my ESC can handle this motor? Whenever I run the car, the ESC gets red hot, and I wonder if I'm eventually going to burn up the thing.

I am also curious about the purpose of having capacitors installed in a motor-ESC setup. I recently purchased a Novak 610HRV ESC and a Trinity Ruby motor for a new F1 car; I haven't assembled it yet. The ESC's instructions tell me to solder capacitors on my motor. Why was this not necessary on the Futaba? (Or did I just miss this step?) Thanks in advance for the response.

JAY TULAO  
Paranaque, Philippines

Jay, here's the deal. Your Futaba ESC does not feature high-frequency switching; it was designed to be a replacement for the mechanical speed controls

that come with many R/C kits. In other words, it was designed only for stock motors. It will handle a very mild-modified motor, but it sounds like your Yokomo motor is not very mild. It's also possible that you might have your car overgeared. Try installing a pinion gear with three fewer teeth. This may solve your problems or at least make your ESC run cooler.

Your Novak ESC does feature high-frequency switching; however, half of the ESC's FETs are devoted to forward, and the other half are for reverse. Because of this, the ESC will handle only modified motors with no fewer than 16-turns (again, a mild-modified). Another problem you might encounter is being able to make this rather large ESC fit inside a cramped and narrow F1 chassis. Hey, with a little ingenuity, it can be done.

As far as capacitors, you'll need at least two (most ESC manufacturers require three) soldered to the motor's leads. You'll need capacitors because electric motors cause a lot of interference, which is picked up by your receiver; the results are glitches and signal loss. Well, I hope this information helps you.

George

## Coaching Duties

Can you get the staff's opinion for me? Here's the situation. My son and I race at club races and a few big events. Earlier this year, he turned six. He is above the novice level at most tracks (if offered), but he's not an "expert" stock driver. My questions are about marshaling and coaching. My son tries very hard and does very well for his age (better than some who are a lot older), but some turn marshals don't give him a fair shot. They seem to decide that he is in the way or in the wrong class, so they marshal with prejudice. Therefore, I marshal out of turn (fairly and to

all) and coach him during his heats on how to attack the track: "Slow down there," "Punch it," "Let him by," "Pass in that corner," "Brakes!", etc. I get scolded for that. What is politically correct? Yes, we do practice, and I marshal in my correct heats as well as his. Please address the coaching; I get in the most trouble for that. I think I know the answers for the marshals.

SCOTTY  
via email

Well, Scotty, I got the staff's opinions on this subject. We all generally agreed that if it's a club race, then go to town and help him all you want. If you do help him, though, first ask everyone sharing the drivers' stand with your son if it's OK. Then, when you do give him instructions, make sure that your son is the only one who hears you—you don't want to be up there breaking everyone's concentration!

Now on the other hand, if it's a big race (i.e., a regional or a big trophy event) you might want to get the race organizers' opinion and permission. They might not even let you up there, and they sure won't allow you to shout directions to him from trackside (obviously, that's very un-PC, Scotty).

Where we race, we've seen a father-son team race use a hands-free, headset communication device. You might want to look into getting one. That way, you can help your son all you want and be as quiet as possible. Whatever route you choose, good luck.

And as for marshaling your son's race, I don't think that there is anything necessarily wrong with helping out and making sure he gets a fair break. Just make sure you keep your eye not on only your son's car, but on everyone else's as well.

Doogie

**WRITE TO US!** We welcome your photos, drawings, comments and suggestions. Letters should be addressed to "Letters," Air Age Inc., Radio Control Car Action, 100 East Ridge, Ridgefield, CT 06877-4606. Letters may be edited for clarity and brevity, and each must include a full name and address or telephone number so that the identity of the sender can be verified. We regret that, owing to the tremendous numbers of letters we receive, we can't respond to every one.

## INTERNET ADDRESSES:

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Chris Chianelli: chrisc@airage.com

George Gonzalez: georgeg@airage.com



In search of fun  
and glory, 'cause  
life's too short  
to be a sheep • by Chris Chianelli

# INSIDE Scoop



**SPECIAL CHICAGO SHOW EDITION!**



## Gettin' Serious in Chicago

OK I understand. Some of you might have a problem with the word "serious" when it has anything even remotely to do with me. But when it comes to getting you the info you're hungry for at the biggest show on earth—RCHTA's Chicago Show—I'm very serious. In fact, when we're there, every morning before we go out on the floor, we all take a moment to chant, "This ain't no foolin' around!"

As you can see from the photo, I have the main battle force there with me. This is one of the reasons we've stomped on the embers of our feeble competition. (I'm sorry; did that sound a bit arrogant?) Well, I mean, even the two big guns were there!—our publishers Yvonne and Louis DeFrancesco at my side. Seriously (oops!—sorry!; that is the last time I'll use that word in this issue), there definitely was some cool stuff at the show. I hope you agree.

## Rough-Ride-Ready

I can't stand it! Traxxas just keeps coming out with stuff I want!—no, that I *have* to have! Those Dallas boys did a great job with the Nitro Hawk, the first ready-to-run gas truck. But that was four years ago, and technology marches on. With this in mind, Traxxas now introduces the all-new Nitro Rustler. Like the Hawk, the Rustler comes assembled with or without a radio. But that's pretty much where the similarity ends. The Rustler has a new chassis, a more powerful TRX Pro .15 engine, a more durable clutch and disk brakes, and it's fully equipped with ball bearings.



But wait! There's more. The Rustler also comes with a tuned exhaust system—something I think, as you may already know, that should come as stock equipment on all gas cars. Not only do tuned systems

produce greater power, but they do it while keeping the engine cooler! Worth every penny of the slightly higher cost compared with those nasty little expansion chambers and their long, backpressure-causing, heat-generating extension tubes we see so often. (But I'll save that story for another time.)

By the way, this new truck is not simply an electric Rustler gone gas. There's an awful lot of Traxxas' SRT (super race truck) in this Nitro version; things like all the suspension components. Years ago, when Traxxas came out with their first stadium truck, the Eagle, I said they were the company to watch.

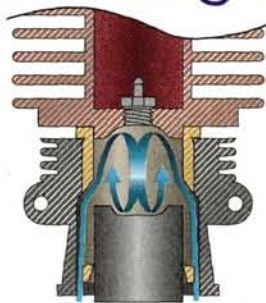
People laughed at me because their only other product was the little Cat—a rugged, entry-level car (that's right; I just patted myself on the back. So what?). Anyway, it looks like Traxxas is

having the last laugh. They're really making products enthusiasts want (including me!).

I almost forgot: Traxxas also has an all-new TQ radio. But to find out about that, you'll have to wait until I review it, or for more info, you could contact Traxxas Corp., 12150 Shiloh Rd., Dallas, TX 75228; (972) 613-3300; fax (972) 613-3599.



## Dishing out performance



Horizon (Dynamite's distributor) reports the concave Paris dish and new head/combustion chamber shape improve gas flow, and that promotes scavenging. A noticeable power increase is the result.

Dynamite's revolutionary new Paris Dish 12PD was designed by the legendary 2-stroke glow-engine wizard Ron Paris, whose engines have won more U.S. championships than all other engines combined.

The Ron Paris Race Team's internal engine mods have long been well-guarded and top secret. Now, the products of Ron's mechanical creative genius are available in this new 12PD. In his extensive race-circuit testing, Ron found that a concave (dish) cut-out in the top of the piston significantly increased power when combined with complementary combustion-chamber shape, squish-band specs and exhaust- and intake-port timings. In addition, the use of a new piston mold that eliminates unnecessary internal material has reduced piston mass by over 20 percent. Other features: black heat-

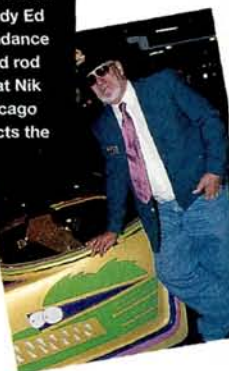
dissipating finish; dual rubber-sealed front ball bearings; machined, billet-aluminum Super Rod; O-ring-sealed, low-speed needle-valve with race-optimized taper and true chrome-plated (not nickel) cylinder sleeve. Rumor has it this is one scary engine—scary for the competition, that is. We will see, won't we ...

Oh, yes; if any of you are wondering (and I know all you pig-boys are) who the pretty woman is, she's Horizon sales rep Susanna. The whole room warms up when this one smiles—truly a solar smile. For more information (about the engine, not Susanna), contact Horizon Hobby Distributors Inc., 4105 Fieldstone Rd., Champaign, IL 61821; (217) 355-9511; fax (217) 352-0058.



## Rat Fink Progenitor

World-famous show-rod designer, personality and creator of the legendary hot-rod T-shirt character Rat Fink, Big Daddy Ed Roth was in attendance with his latest wild rod creation—the Beat Nik Bandit II. The Chicago Show really attracts the colorful.



## Charge the battery and... check the oil?

The Viper GTS is the latest addition to Parma Intl.'s Good Time™ kit series. The GTS features a multi-piece body with a hood that opens to reveal a very detailed and accurately vacuum-molded Chrysler V10 engine for the ultimate in scale impact. The Viper GTS comes complete with decal sheet, stripes, window masking and rear racing wing. The kit includes a clear Lexan body, fiberglass chassis, ball-type differential, high-grip foam tires, Ultra-Tech chrome wheels, aluminum rear pod and hubs and detailed instructions. Contact Parma Intl., 13927 Progress Pky., North Royalton, OH 44133-4394; (216) 237-8650.

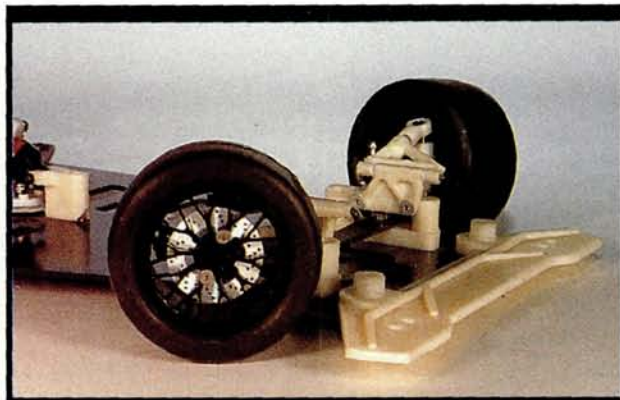




## INSIDE scoop

### The Doctor would approve!

... the brilliant designer Dr. Porsche that is. Tamiya's new 1/8-scale 911GT 1—Porsche's latest Le Mans entry (in full-scale)—sits on the familiar 4WD TGX chassis (which debuted with the Opel Calibra body) also featuring Tamiya's latest glow engine, the FS-15LT, with the new, vertical, U-shaped muffler for improved performance. The body is a two-piece design with the rear section molded of ABS plastic. This ensures a super-realistic body shape that would otherwise be impossible to create with conventional one-piece vacuum-forming methods. For more information contact Tamiya America Inc., 2 Orion, Aliso Viejo, CA 92656-4200; (800) TAMIYA-A; internet: [www.tamiya.com](http://www.tamiya.com).



### Street Real for Real

Has it ever annoyed you that there was no way to mount those beautiful looking (and effective) Pro-Line Speed Hawg street tires on your pan car? I know it's annoyed me more than once. Of course, everything annoys me. Anyway, now there is a way. With Pro-Line's new narrow front and narrow rear Street Wheels, Road Hawg-III tires can be fitted, and with the wide Rear Street Wheels, Road Hawg-I tires can be fitted. Pro-Line Street Wheels will fit your RC10L, Bolink Sport, EV10, C&M Cobra and any other pan-car chassis. Finally! With this tire and wheel combination, my 1970 Mustang Mach-1 looks the way it should—street real and "scaled-out." Oh yes, the full-scale disk brake (non-functional of course) is part of the wheel. They will make your car look real for real (thanks Todd). Also, you're getting a first look at Pro-Line's new tire also specifically designed for pan-cars. This tire will be available in both treaded and slick versions. Contact Pro-Line, P.O. Box 456, Beaumont, CA 92223; (909) 849-9781; fax (909) 849-2968.

## Trinity Presents The SPEED GEMS Collection



### -TOPAZ-

4WD Buggy/1:10 Oval  
11 Turns, 3 Winds  
36,750 RPM, No.9200



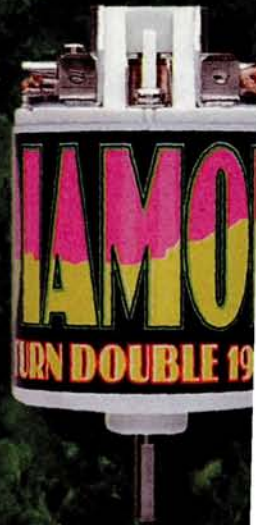
### -RUBY-

2WD Trucks/Buggies  
16 Turns, 3 Winds  
25,600 RPM, No.9201



### -SAPPHIRE-

Monster Trucks, Planes, Boats  
17 Turns, 1 Wind  
24,150 RPM, No.9202



### -DIAMOND-

1:10 On-Road/Oval  
12 Turns, 2 Winds  
33,750 RPM, No.920





### Bad Memories Gone!

Battery cells have a bad habit of developing what is metaphorically referred to as "false memory." This greatly upsets the mapping of a battery pack's discharge curve. OK; all we really need to know is that proper cell cycling (charging and discharging) will, for the most part, prevent this. Discharging is the other half of the cycle—one we often don't give enough attention. Trinity's new Memory Buster Battery Discharge Board was designed to discharge at the quicker rates that are optimum for conditioning the Sanyo RC2000mAh 6-cell battery packs and keeping them in top condition. This unit is also suitable for 1700 and 1400 cells. The Memory Buster features LED discharge monitoring to tell you when the pack has completed a full discharge sequence. Suggested price is \$29.99. Contact Trinity Products, 1901 E. Linden Ave. #8, Linden, NJ 07036; (908) 862-1705; fax (908) 862-6875.

## RS4 evolution

In the relatively short time Yokomo's RS4 has been around, it certainly has earned a favorable reputation for itself on the "lot circuit." That's why it should come as no surprise that a nitro version is now



being offered. The new Nitro RS4 comes with a .12-size, pull-start, Nitro Star engine and muffler. It can be built wide or narrow, so all HPI bodies will fit. Standard high-performance features include: oil-filled shocks, fully independent suspension, front and rear belt drive, HPI Super Radial tires and a disk brake. A full supply of high-quality HPI hop-ups are in the works, so you'll be able to customize your Nitro RS4 if you're so

inclined. How do a Nitro Star .15 engine and a 2-speed tranny sound for starters? "Nitro-eater" is not the only evolutionary path the RS4 is trying to tread. Owing to an environment of enthusiast favor, the RS4 is making a go of it in the "wild kingdom" of the truck. I'll have more on the new HPI truck at a later date. Contact HPI, 22600-C Lambert St., Ste. 904, El Toro, CA 92630; (714) 837-3250; fax (714) 837-3251.



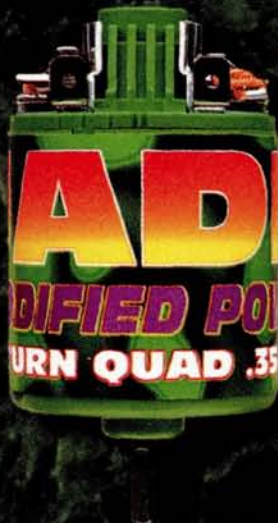
**Also new from HPI is this concept Beetle body designed to fit all "M-scale" chassis.**



## Rare Examples Of Performance And Economy.



**-ONYX-**  
2WD Trucks/Buggies  
14 Turns, 2 Winds  
29,100 RPM, No.9204



**-JADE-**  
2WD Trucks  
15 Turns, 4 Winds  
27,060 RPM, No.9206



**-QUARTZ-**  
Touring/F-1, Planes, Boats  
19 Turns, 2 Winds  
21,540 RPM, No.9207

Speed Gems machine wound modified motors are an excellent alternative for a racer on a budget. Constructed with the same superior quality components as our expensive modified motors, they have a machine wound armature. This combination produces an extremely fast motor at about half the cost of a hand wound. Only \$49.99 list. For a rare combination of performance and economy, acquire a Speed Gem today.

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## INSIDE scoop

### Reduces Rivals to Roadkill

To design the Vector, Serpent drew on its 20 years of racing experience, countless world-championship victories and the latest in 3D software. The mission directive? To create a no-holds-barred 1/8-scale, all-out road-racing machine. Reports are the Vector's suspension system's level of precision and response are unprecedented. With its exclusive Dynamic Roll-Center Stabilization, optimized camber, low "polar force/center of gravity" components and progressive-bias suspension, the Vector handles more like a full-scale car than a model. No effort has been spared to increase drive-train efficiency and reduce the power-robbing losses that result from vibration, flex and drag. Other all-out measures include: tri-point rear upright, "ultra-rigid parts integration," super-strong BBS-style racing wheels, low-drag gear and belt system, bulletproof Centax clutch and self-centering spring mechanism to ensure consistent and complete brake disengagement. Following the introduction of this car, Webster might have to add a new definition to its entry for the word "vector"—something like: *an asphalt animal that feeds solely on highly refined carbon-chain compounds and reduces rivals to roadkill.*

For more information, contact Serpent USA Inc., 2832 NW 79th Ave., Miami, FL 33122; (305) 639-9665; internet: [www.serpent.nl](http://www.serpent.nl).

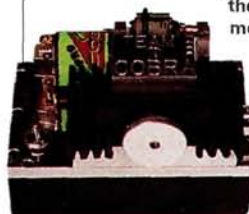


### Lots of Stuff for Less

Tim Renaud of Airtronics proudly poses with the new Airtronics narrow-band FM CX2P, which was designed to be a less expensive follow-on to their high-zoot 3Ps. The CX2P has a very comfortable grip that, when I held it, did seem to instill a relaxed and confident feeling. You know my opinion about feeling relaxed and confident: it can only make you a better driver. The transmitter has an interchangeable driving position for either "lefty" or "righty" drivers. Optional extension grip pads can contour the handles to best fit your hand. Naturally, the radio has adjustable rate control (ARC) as well as thumb-wheel adjustments for steering dual rate that allow correction even during a race. End-point adjustments (EPA) for throttle and steering are standard features, and steering-wheel tension can be adjusted exactly to your liking. The CX2P reinforces my opinion about Airtronics: they really do make nice car radios. For more information, contact: Airtronics Inc., 15311 Barranca Pky., Irvine, CA 92618; (714) 727-1474.

### Motor-Head Alert!

Team Cobra's new version of their Comm Lathe is called the "Motor Builder's Edition." This improved unit features 50-percent-wider guide ways for more precise cutting, plus hardened-chromoly tool-steel uprights for durability and improved accuracy. The ways are covered with collapsible bellows to keep them free of cutting debris. For easier use, the crank is conveniently located opposite the drive motor. For more info on



Cobra's Motor Builder's Edition of the Comm Lathe contact C&M Mfg. Inc. P.O. Box 701-353, West Valley

City, UT 84170; (801) 974-5757; fax (801) 974-0869.

### Push-Button Selectable

Team Orion's new chargers—the D-48 (4 to 8 cells, 4.8 to 9.6 volts) and D-114 (1 to 14 cells, 1.2 to 16.8 volts)—both have five charging modes that are selected with a push (or several pushes) of a button. For example, a 3-cycle mode, which consists of discharge, slow charge and fast charge repeated three times and capped off with a slow charge, is achieved by pushing the start button four times. Pretty neat! Features include: 0.5A to 5.5A adjustable charge rate, 4A discharge with capacity display, digital display for capacity, voltage and current, built-in cooling fan, PWM (pulse-wave metering) technology pulse



charge, "FUZZY" logic (that means it can think for itself! Not really—well, sort of.) and reverse-voltage protection. For more information, contact Peak Performance Racing Motors, 23352-J, Madero

Rd., Mission Viejo, CA 92691; (714) 707-4683; fax (714) 707-4684.

### The Ironman Cometh



MRC has two new offerings targeted at entry-level racers: the Ironman Truck and the Vortex buggy. Both vehicles are based on the 2WD MT-10 design and feature oil-filled shocks, fully independent suspension, front toe-in adjustment, lightweight fiber-resin chassis, 48-pitch gears, clear polycarbonate tranny cover and three spur gears (so the optimum ratio can be selected for a specific track). The Ironman has large monster tires and what is, in my opinion, one very nice-looking Dodge Ram body. The Vortex has narrow-rib front tires, low-profile pin-spoke rear tires and an adjustable wing. For more information, contact Model Rectifier Corp., P.O. Box 6312, Edison, NJ 08818-6312; (908) 225-2100; fax (908) 225-0091.



"Readers' Rides" is our way of recognizing the unique, innovative—and sometimes bizarre!—vehicles that our readers have created. Send us a sharp, uncluttered, well-exposed color photo of your car or truck (no Polaroids, please!), along with a brief description, to Readers' Rides, R/C Car Action, 100 East Ridge, Ridgefield, CT 06877-4606. If we choose to feature your creation, you'll receive a 6-month subscription to Car Action, or an extension of your existing subscription. You'll also be eligible for the eighth annual "Readers' Rides of the Year Contest" in the fall of 1997. The winner will be awarded \$500 and an assortment of electronic R/C equipment furnished by Novak Electronics Inc. Our second and third choices will also receive an assortment of Novak electronic R/C equipment. In case we need to contact you, write your address and phone number on your letter and on the back of every photo you send. Good luck!

## OUTLAWED!

On Saturday nights, Austin and Jim Johnson of Vestal, NY, can be found accompanying this outlaw to their local raceway. Austin tells us there's no better time than watching his bad Associated RC10T2 wheelstand down the straightaways and slide sideways out of the corners at full throttle. For maximum performance, they equipped it with an Integy heat sink, Novak Duster speed control and Futaba receiver and servo. It has a complete set of Jaco foam racing tires. Jim painted the Parma stadium body.



## LEAPIN' LIZARDS

Chris Bennett of San Diego, CA, liked his tattoo design so much that when it was time to paint the body of his Losi GTX, he decided to replicate it! He tells us the car



tears up local parking lots with its recently mounted Pro-Line Road Hawg tires and chameleon-like adaptability. He powers it with an O.S. CZR .12 engine, an MIP heat sink, a Futaba Magnum Junior radio and Futaba FP-S148 servo and protects his on-board receiver with a Kyosho cover. Chris is so pleased with his "Flying Lizard" that, even though it's his first ride, he knows it won't be his last.



## MAGIC CARPET RIDE

Down in Happy Valley, South Australia, Anthony James and one of his mates built a carpeted and banked track in the backyard because they couldn't find enough satisfactory dirt to build a dirt track. Anthony runs this Traxxas Rustler on their smooth, clean track. Improvements for better performance include a full set of bearings, Losi springs, a Tekin TP-MK II ESC, Yokomo ProStock 19-turn motor, Kinwald hardened pinion gears, GPM alloy turnbuckles and Sanyo 1700 SCRCs. When he feels like getting dirty, Anthony rides HPI Five Star and Pro-Line Speed Hawg tires, but he runs Frewer mini-pins for magic carpet rides!

## ONE GREEN MACHINE

This 1/10-scale Opel Calibra has been jazzed up with a custom mix of Pactra colors. Wayne Gregory of Brooklyn, NY, enjoys experimenting on the bodies of his cars. In addition to its metallic green color, he detailed it with graphics from Autographics, Detail Master plates and Dahm's chrome trim. He has equipped the car with a full set of bearings and a Speedworks Onyx 14-turn motor, and he rides it on the recommended HPI tires. Wayne drives his machine with a Futaba Magnum Jr. radio and a 210 CB ESC. If this car runs as fast as it looks, Gregory has a speed demon on his hands.





## PHENOMENALLY FAST

Jeff Cloud of Arlington, TX, tells us that his Yokomo YR-4M is "Scary fast!" He has outfitted it with a range of hop-ups and sick equipment including Litespeed 1700 SCRC batteries, Litespeed modified motor, LRP speed control, JR servo and receiver, MIP CVDs, Lunsford titanium hinge pins and tie rods and an Associated blue aluminum screw set. Jeff has also equipped it with some hand-machined parts like a lightened motor mount, titanium spur gear shaft and battery hold-down system that uses an O-ring and turned aluminum retainer posts. His efforts are obviously well worth it if he's scaring the competition away.



## WEEKEND WARRIOR

The Sugarbowl Raceway in Sugar Hill, GA, is "home" for this RC10T2 and its owner. Clint Symons races this heavily modified fighter almost every weekend and makes maximum use of the many features he's given it. They include graphite shock towers, Associated blue screws, a Dahm's body, Pro-Line tires, a Phantom 13-turn double powered motor, ESP 365 cells, Deans ultra plugs, a Novak Tempest Pro receiver, a Losi Hydra Drive system, MIP CVDs, Lunsford hinge pins and turnbuckles, RPM body mounts, gear cover, bumpers and 3-degree rear mounts, a Futaba FM radio and servo, MIP ball-bearing steering and gold shock shafts and a Tekin 112C charger. Clint has to be getting winning results with the array of equipment he's put on this beauty: it's a racer's dream!



## IT'S GRRRRREAT!!!!

Syrenata Patterelli of Port St. Lucie, FL, seems to look at R/C cars as her canvas. This is her second effort at painting and detailing a body. She detailed this Dahm's Killer Bee body with a Kellogg's motif. Using paper reinforcements as Fruit Loops stencils, she painted them on by hand. She cut Toucan Sam, Tony the Tiger and the Fruit Loops logo off the cereal packages, soaked them in water and peeled them down to one layer. Syrenata used a reverse collage technique to transfer them onto the car's body. Sounds like a craft project as much as it does R/C action!



## THE LADY BUG

Gradually, we're finding out about more women in racing through both our experiences at the races and trade shows and through our mailbags. Among the many "Readers' Rides" letters delivered to our offices, more and more are from women who are proud of their R/C efforts. Mike Berkley wrote to tell us how fortunate he is that his fiancée, Dawn Krediet, of South Holland, IL, is way into racing. Shown here is her "Buggy," a Losi LXT chassis with a Dahm's body that she hand-painted and designed. She has equipped her ride with a Novak ESC, Litespeed motor, plate and heat sink and a Race Prep Purple Haze motor.

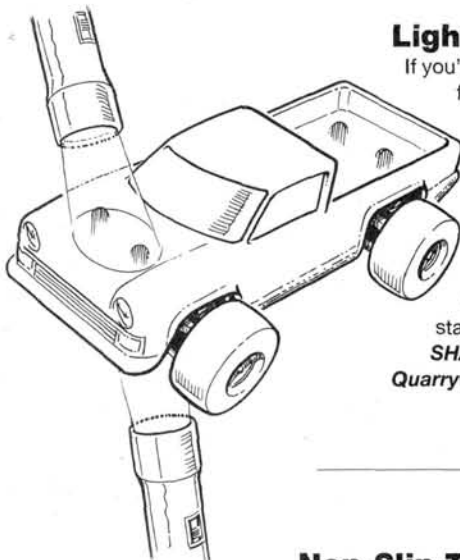






## PIT TIPS

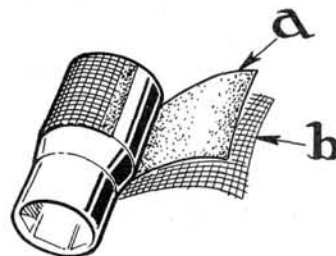
by Jim Newman



### Light Show

If you've painted the body but forgot to drill the mounting holes, shine a flashlight from either up top or below. The mounting posts will usually show up as a shadow, so it's easier to mark and drill the holes. Remember to start with a small hole.

**SHAWN SUYDAM,**  
Quarryville, PA



### Slipper Nut Tool

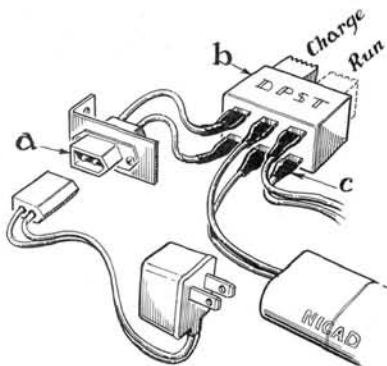
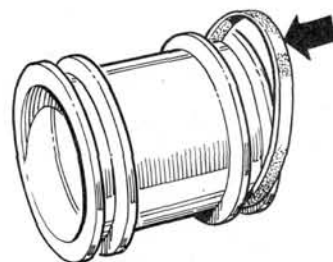
For a better grip and "feel" when you adjust your slipper nut, wrap a band of double-stick carpet tape (a) around a 1/4-inch-deep (6mm) socket wrench that fits the clutch nut. Over the tape, wrap a layer of aluminum window screen (b).

**ROCK WOODSTOCK,** Rock Island, IL

### Non-Slip Tire Mounting

In an emergency, rather than gluing a slipping tire in place, stretch rubber bands around the bead well; this will provide sufficient friction to prevent the tire from spinning on its rim.

**DAN KEEN,** Ocala, FL



### External Charge Plug

To charge your battery pack without removing the body, mount the plug (a) on a bracket so that it is accessible through a hole in the body side. Mount the double-pole-single-throw (DPST) switch (b) where you can reach the knob. To prevent short circuits, be sure to put shrink sleeves (c) on all connections. Connect the charger, flip the switch and charge away!

**JEFFREY SCOTT,** Lizella, GA

### Recycled Pylons

To make economical and ecologically sound course markers, paint plastic quart-size milk or juice jugs bright orange; add only a little sand to the base. You might damage your car if you hit a heavy marker.

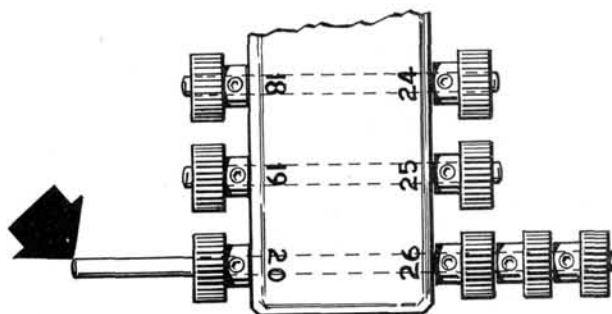
**JACK FAENZA,** Gillette, NJ



### Extended Pinion Caddy

To carry extra gears when your pinions are the same length, push out a short pinion-holder pin and make a longer one from music wire or a nail.

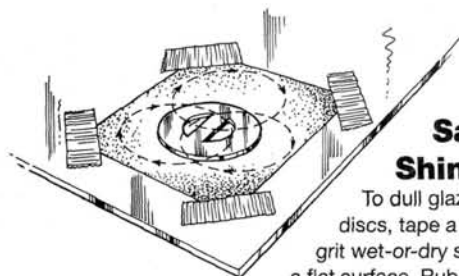
**PETER FEBBRAIO,** North York,  
Ontario, Canada







## PIT TIPS



### Sand the Shine

To dull glazed clutch discs, tape a piece of 400-grit wet-or-dry sandpaper to a flat surface. Rub the clutch discs in a circular motion until they are evenly dulled.

**ZACH RHUE, Colorado Springs, CO**



### Stick-On Cover

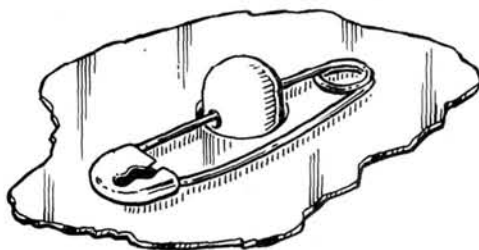
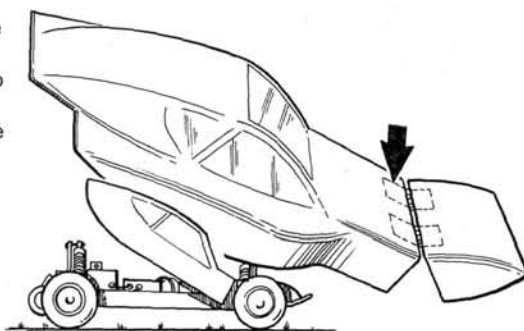
As a temporary replacement for a transmission gear-cover end plug, apply a sticky-back decal or a piece of servo-mounting tape. For better adhesion, first clean the transmission's surface.

**MIKE BURRIS, Huntsville, AL**

### Flip-Top Body

For easy access to the inside of your buggy, cut the body just behind the front shock tower, and glue in two heavy-duty R/C plane hinges. To open, just pull the rear clips.

**FRANK OLSON, Wellston, MI**



### Emergency Body Clip

A safety pin makes a fine temporary replacement for a misplaced body clip.

**COY TINSLEY, Broadus, MT**



### Vibrating Paint Mixer

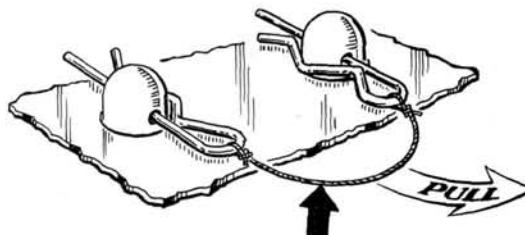
To thoroughly mix paints, stand your smaller paint bottles on the side of an old hair clipper, hold it loosely between your fingers, and let the bottles "dance" on the running razor.

**RAY PARK, Long Island City, NY**

### Quick-Release Clips

To quickly release both clips during a pit stop, tie them together, then tug on the cord.

**PETER ELLIS, Sydney, NSW, Australia**



Radio Control Car Action will give a one-year subscription (or one-year renewal if you already subscribe) for each idea used in "Pit Tips." Send a rough sketch to Jim Newman, c/o Radio Control Car Action, 100 East Ridge, Ridgefield, CT 06877-4606. BE SURE YOUR NAME AND ADDRESS ARE CLEARLY PRINTED ON EACH SKETCH, PHOTO AND NOTE YOU SUBMIT. We're unable to publish many good tips because we don't have the sender's name and address. Please note: because of the number of ideas we receive, we can neither acknowledge every one, nor can we return unused material.



# PRODUCT WATCH

by Frank Masi

## Novak Cyclone ESC

### Wizard of Ohms



**R**ecent strides in technology and the desire for high performance have caused every facet of R/C vehicles—from their tires, transmissions and shocks to their electronics—to come under intense scrutiny by racers and manufacturers. Electronic speed controls (ESCs) have not eluded this attention.

Pro and factory-sponsored drivers have become so attuned to their vehicles' responsiveness that they are able to gauge the smallest of changes to a suspension setting, tire, or even speed control. No longer is it acceptable for a manufacturer to tout an ESC merely on the merits of its efficiency and current-carrying capacity. Today, racers want it all: different ESC performance parameters for different track conditions and for racing with different types of vehicles.

It might seem as if no single ESC is capable of meeting the needs of all R/C electric racers. But this might not be the case anymore with the release of Novak's\* new Cyclone—a fully programmable ESC that appears to be quite beyond anything we've seen thus far.

#### SMOOTH OPERATOR

First and foremost, let's discuss smoothness. Most racing ESCs, including Novak's own Tempest and Hammer Pro, provide anywhere from 32 to 64 "steps" for forward and brake. If you're familiar with a mechanical speed control, you know that a step is the number of "speeds" given for either forward or reverse. With any speed control, mechanical or electronic, more steps means a greater range of speed and increased control over your vehicle. The Cyclone has an unbelievable 256 steps for forward and an equal number for brakes. This means that you can vary both forward speed and brake travel in increments of 0.39 percent of the Cyclone's total range. That's the largest range of control currently available in an ESC.

*The Cyclone is the world's first fully programmable racing speed control. Its small size belies its astounding number of features. Note the Data Link port with which the Cyclone can interface with your PC to allow custom programming.*

The operating frequency of an ESC is equally important to the way it "feels" when you drive. A higher operating frequency provides an ESC response that could be described as being more "mellow" in low- to mid-range speeds. Conversely, a lower operating frequency creates an impression that the vehicle has more "punch." Both responses have their uses; you may want the drivability of a higher-frequency ESC when traction is scarce, and the low-throttle zip provided by a lower-frequency controller might be just the ticket on a high-bite off-road or carpet track.

Traditionally, most ESCs are a compromise between high and low frequency, and racers often tailor their ESCs to different track conditions through their transmitter's throttle-exponential (TH-EXP) setting. But doing this is another compromise as exponential creates a "curve," or non-linear throttle response. In plain terms, if you set your transmitter's exponential to a negative value—as many do for slippery conditions—your throttle's response will feel very sedate up to about 50 to 60 percent of its travel. Past this point, however, your ESC will feel like an on/off switch.

The Cyclone's ability to operate at as many as 16 different frequencies allows it to cope with any track condition or driver's preference while providing linear throttle response—no sudden surprises!

*Novak's excellent and thorough owners' manual is invaluable for utilizing all of what the Cyclone can offer serious racers. I still take mine to the track; there's a lot to know about this speed control!*

#### SPECIFICATIONS

Case size.....	1.73 x 1.10 in.
Weight .....	1.44 oz.
Input voltage .....	4 to 10 cells
	@ 1.2 volts per cell
On resistance* .....	0.001167 ohm
Rated current .....	420 amps
Braking current .....	140 amps
PWM frequency .....	3900Hz
	(default setting)
Battery-	
eliminator circuitry .....	6 volts/3 amps
Schottky diode .....	Internal
Wire size .....	12-gauge (included)
Receiver plugs .....	Futaba J, Airtronics,
	KO Propo, Kyosho,
	JR and Hitec (included)

\*Manufacturer's ratings





# Logging on to the Cyclone

The Cyclone comes pre-programmed with three distinct, user-selectable performance profiles. With Novak's optional ESC Profile software or Pit Wizard interface (for those who don't own an IBM-compatible PC), you can create a custom profile for the Cyclone that's as personal as your toothbrush.

The Cyclone has 10 independent "parameters" that can be changed to tailor its performance to your liking.

- **Neutral**—the position at which the Cyclone provides neither forward nor brakes; measured in microseconds. This is different from the dead-band setting as neutral isn't affected by the Cyclone's "brake blipping" feature.

- **Full forward.** The Cyclone allows you to set the time, in microseconds, that it takes to go from neutral to full throttle. Again, think of this as a distance: how far you must pull the trigger before the Cyclone reaches full throttle. For slick tracks, you'll want full throttle to occur as late as possible; this will give you the greatest range of low and mid throttle for the utmost control of wheel-spin.

- **Full brake**—exactly the same feature as "full forward"; however, this affects the point at which full brake strength occurs. If you want maximum braking control, you would set this to its greatest value, i.e., full brakes won't apply until you pull the trigger nearly all the way back.

- **Dead-band value**—the distance between the first pulse of throttle and

brakes. Provides an amount of "dead space" in the throttle trigger's movement where no throttle or brakes are applied.

- **Brake-blipping value.** This feature applies a brake pulse to the dead-band area to provide a small amount of battery regeneration. Measured as a percentage of full brake, a higher value provides a stronger "drag brake" effect in the dead-band area.



Novak's Tyree Phillips demonstrates the capabilities of the Cyclone using the ESC Profile Software at the Chicago RCHTA show. At the time of this writing, neither the software nor Novak's Pit Wizard interface was available for testing.

- **Brake-blipping frequency.** Adjustable from 122Hz to 23400Hz, a higher frequency produces a more subtle drag-brake effect.

- **Drive PWM frequency.** This allows you to adjust how the Cyclone feels in low- to mid-throttle positions. A higher frequency provides a smoother feel as you progress to full throttle. A lower frequency gives a feeling of additional "punch" at lower throttle settings. This feature is adjustable in 16 increments from 122Hz all the way up to 23400Hz.

- **Brake PWM frequency**—same as the drive PWM frequency

(can be set at between 122Hz and 23400Hz), but acts on the Cyclone's brake travel. A higher frequency provides smoother braking action en route to full brakes, but you must push your transmitter's throttle trigger farther before you'll feel any significant braking action.

- **Minimum drive value.** This sets the amount of forward drive that occurs when you move from the neutral position. A higher minimum-drive value

helps heavier vehicles such as off-road trucks get under way quickly. A lower minimum drive is useful for lighter vehicles and for reducing wheel-spin when driving on slippery surfaces.

- **Drag brake**—adds an adjustable amount of braking to the neutral position so that when you let off the throttle, the car will slow to make tight turns. This lets you drive more aggressively and accelerate longer before slowing to take a corner. The strength of the drag brake is set by the Cyclone's brake pot.



The Cyclone installed in a Losi XX buggy. Compare the sizes of the Cyclone and the Airtronics® receiver. The Cyclone requires little space and should fit easily into any chassis.

With the aid of Novak's optional ESC Profile Software or Pit Wizard interface (see sidebar), the Cyclone's operating frequency (for forward and brake) can be set to range from 122Hz all the way to a mind-numbing 23400Hz.

## PERFORMANCE PROFILES

The Cyclone comes with three built-in performance "profiles." (A fourth, "blank" profile is included in the Cyclone's processor, but you must purchase Novak's ESC Profile Software or Pit Wizard interface to create a custom profile.)

- **Profile 1** provides a larger "dead-band" area (9 percent), which describes the distance, in microseconds, between throttle engagement and brake engagement. Novak refers to these distances in terms of time (microseconds), but I prefer to think in terms of how far you have to move the radio's trigger; it's easier to visualize what's going on! The larger dead-band area ensures that when you let off the throttle, you won't accidentally apply brakes—or remain in forward speed. Additionally, the throttle triggers of certain radios have more play, or slop, than others; a larger dead-band compensates for this.

Profile 1 also provides a "minimum drive" value of 6.25 percent. This means that as you apply throttle from the neutral position, the Cyclone will begin driving the motor at 6.25 percent of full throttle. This feature is used to tailor the Cyclone to vehicles of various weights and to different traction situations. Heavier vehicles such as off-road trucks

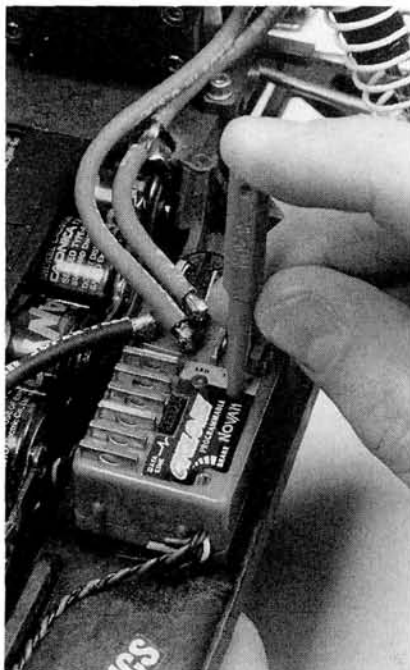


require a higher minimum drive to get them moving; lighter vehicles, such as  $\frac{1}{12}$ -scale cars, need less drive initially. A lower minimum-drive setting is also helpful in controlling wheel-spin on slippery surfaces. For high-traction conditions, you might wish to set the minimum drive value even higher for added punch when going from neutral to forward throttle.

While set in Profile 1, the Cyclone actually operates in two frequencies: 5860Hz in forward and 3900Hz for brake. As mentioned, the Cyclone is capable of operating at up to 23400Hz for braking as well as forward. But higher frequencies tend to numb the feeling of the braking action, i.e., you really must push back on the trigger before you begin to notice the brakes. If you've used any of today's high-performance, high-frequency racing ESCs, then 3900Hz brakes should feel pretty familiar.

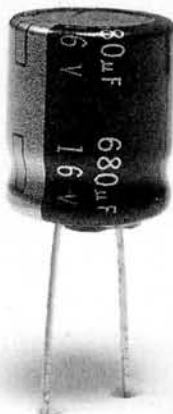
- Profile 2 features a slightly smaller dead-band area (6 percent) than Profile 1, so there's less "space" between throttle and brake activation. A smaller dead-band area is particularly useful for precise, on-road driving, or for use with newer radios that have "tight" throttle triggers with little slop. Profile 2 also has a higher minimum drive value (10 percent), so as you move the throttle from neutral, your car will have a little more punch. Again, this can be an advantage when traction is good and you're not too worried about breaking the rear tires loose during acceleration.

Profile 2 is pre-programmed with exactly



**Activating the Cyclone's One-Touch Set-Up™ button (using the tool provided) calibrates the ESC to your transmitter's settings.**

**The included power capacitor (left, shown next to a Schottky diode for scale purposes) absorbs power spikes and helps smooth the ESC's performance and reduce radio interference.**



the same drive and brake frequencies (5860Hz and 3900Hz, respectively) as those of Profile 1.

- Profile 3 has the smallest dead-band area of the three (only 4 percent), so you'd better be pretty accurate with your throttle trigger when in this setting. However, because it has the smallest minimum drive value of the three profiles (just 1.5 percent), the transition from neutral to forward throttle will be smooth and seamless.

Although Profile 3 shares its brake frequency with the other two profiles (3900Hz), its drive frequency of 15600Hz is, by far, the highest of the three.

#### WHICH PROFILE IS BEST?

In its instructions for the Cyclone, Novak recommends Profile 1 for  $\frac{1}{10}$ -scale off-road, Profile 2 for  $\frac{1}{10}$ -scale on-road and Profile 3 for  $\frac{1}{12}$ -scale on-road. My advice (and Novak's) is that you use these recommendations as a guideline, but experiment with all three to find which is right for your particular conditions.

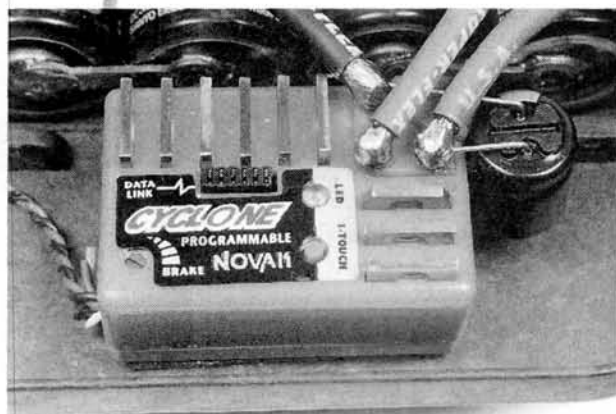
If you're racing off-road, don't hesitate to try Profile 3 if you're having traction problems; its high frequency and low minimum drive settings will provide superb

control at lower throttle settings to prevent wheel spin. Also, if you're racing on a  $\frac{1}{10}$ -scale asphalt roadcourse, you might try Profile 1 because of its lower minimum drive setting. Bottom line: don't be afraid to try any of the profiles—regardless of your type of vehicle.

#### OTHER FEATURES

Beside programmability, the Cyclone has a host of other Novak features such as:

- One-Touch Set-Up™ button that allows you to quickly match the ESC to any popular transmitter;
- Radio Priority Circuitry and Digital Anti-Glitch Circuitry, which ensure that you retain control of the vehicle as the battery current dwindles;
- Polar Drive Technology for efficient and cool operation;
- adjustable "minimum brake" feature that lets you set the amount of initial braking strength that occurs as you move



**The Cyclone shown with power wires and power capacitor installed. Novak's solder posts make it easy to install and rearrange the power wires.**

the throttle trigger from neutral to brake. This value can be set from 0 to 75 percent of total brake travel, minimum brake is controlled by an adjustable "pot" (potentiometer) on the controller's face.

- The Cyclone also includes Novak's brake-light kit, which activates two red LEDs whenever you apply brakes—looks great with touring-car bodies!

#### INSTALLATION

One of the Cyclone's other amazing features is its size—or lack of size; it takes up roughly the same space as the smallest Futaba receiver! Needless to say, it will fit easily onto any chassis with room to spare. After you've selected the mounting position for the Cyclone, you must install the included power capacitor—a large, cylindrical storage capacitor intended to absorb power spikes from the ESC that could otherwise cause radio interference.

*(Continued on page 166)*





## Off-Road Suspension Tweaking

**T**HE GUY who was pitting next to me at the off-road track came back from his final practice session with a disgusted look on his face. He put his radio into his pit bag, dropped—and I mean literally dropped—his buggy onto the table



and started to pack up his equipment to go home. This guy wasn't just upset; he was angry, frustrated and ready to quit. Even though I didn't know him very well, I figured I would ask him what the problem was and then see if I could offer him some assistance. Hey, two heads are better than one, right?

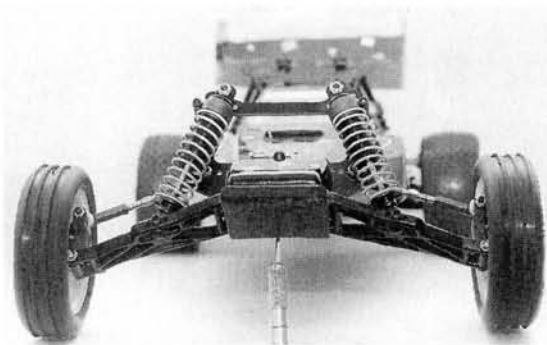
"The car's plenty fast," he began. "In fact, I just bought four new matched battery packs and put them together this past week. I picked up two new stock motors as well, because now I have the

voltage and run time to take advantage of them. I went over the whole car and checked it out, just to make sure everything was OK. It's a solid car; I've been racing it for over six months, and I really haven't had any trouble with it at all. I even took the shocks apart, rebuilt the seals and put new shock fluid in them, even though they weren't leaking. Now, every time I take a jump, the car goes in a different direction! On the double, it goes off to the right, but on the tabletop, it launches to the left. And now that I have all of this power, the car really flies, so it's not just landing at the edge of the track or off my line; it's landing on the boards!"

I thought about what he had said for a moment, pulled one tool out of my pit box and checked each end of his car. I then used another inexpensive tool to verify what the trouble was and exactly where his problem was. In less than 5 minutes, we had him back on the track. His car handled much more predictably, landing straight and true off every jump. He went on to place well up in the A-Main, instead of going home grumbling, and the resolution of his problem didn't cost him a penny. Can you guess what the problem was and which two tools we used to fix it?

### THE PROBLEM

The first tool I pulled out of my pit box was a common hobby knife with a no. 11 blade—pretty much what we all use to



**The wheels on this car lift off the flat pit surface at different times—a sure sign that the car is tweaked to one side or the other! You should regularly check both ends of your off-road car or truck.**

carve out decals and trim new molded-plastic parts.

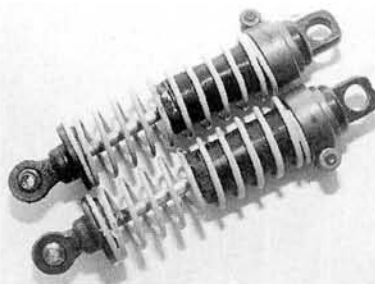
With the batteries and the rest of the electronics on board, I smooshed his buggy down on the flat pit surface two or three times, so that it would be sitting the same way as if it had just negotiated a couple of bumps on the track. Then, using the tip of the hobby-knife blade at the center of the front bulkhead, I lifted the buggy while keeping a close eye on the bottoms of the front tires. Sure enough, just as I had suspected, one tire came off the surface before the other one did. I then turned the car around and performed the same operation, this time lifting the

That's when I reached for my K&S\* vernier calipers, which cost less than \$5 at most hobby stores (especially ones dedicated to R/C airplanes and helicopters). These calipers do a pretty fair job of measuring distances and lengths within a millimeter or so. I checked the lengths of his front and rear shock absorbers (remember, he said that he'd rebuilt them, including new seals), and sure enough, the left and right bouncers were different in length on each end of the car. That meant that the shock springs had been pre-loaded differently, and this was causing the car to jump to one side or the other, depending on the type of jump, the car's speed and how much power was applied as the car left the ground. Simple to fix, but devilishly difficult to diagnose.

### THE FIX

So, how did we fix this problem in less than 5 minutes? All we had to do was remove the longer of the two shocks

on each end of the car and screw the shock's ball end onto the shock shaft another turn or two. When my new friend had rebuilt his shocks, he'd been in a hurry, and he hadn't fully tightened the ball ends onto the shock



**The front shocks turn out to be the culprit; they're different lengths. Even though they're off by only a little, the car doesn't take jumps very well, and its handling is erratic.**

rear of the chassis at its center point under the transmission. Once again, one tire showed daylight under its treads before the other one. I had verified that the car was tweaked, but what was causing this condition?

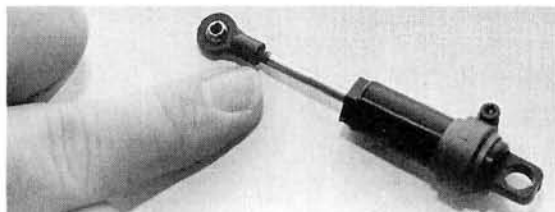


shafts. Because this meant a difference in shock length of only a couple of millimeters, it wasn't enough to make the car handle badly while all four wheels were on the ground—just when it took off or landed from a

same length? I've seen people go to great lengths (calipers, rulers, marking devices) to make sure that they pre-load their shock springs equally, but are the springs themselves of equal lengths? If they aren't, all the care in the

ness? This is another really simple check; just make sure that the shock-shaft spacers you put under the piston are the same thickness on both sides. Kit spacers usually come off the same parts tree, so they're all the same color. They may not all be the same thickness, though, so take a moment to make sure you've installed the same limiters on both shocks.

Even when you carefully check the dimensions of all the parts that make up the shock assembly, sometimes, the springs aren't compressed at precisely the same rate, or the chassis itself may be a little off. In that case, use minor shock spring pre-load adjustments to bring both front



**The solution is simple: turn the bottom shock mount on the longer one a couple of turns to make the length of both shocks the same.**

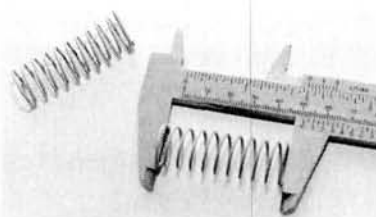
jump. His "fix" was easy, but there are other ways this handling problem can crop up.

Consider the following questions:

- Are the top and bottom shock mounts on both sides of your car or truck secured in the same hole on the suspension arms and bulkheads? This sounds so simple it's stupid, but you'd be amazed at the number of shocks I found in different holes (seven!) just by strolling through the pits at an average weekend off-road race. If the shock is in the third hole from the inside on the left, make sure it's in the same hole on the right.
- Are your shocks the

world won't pre-load them equally. Take this into account when you set up your shocks, use additional pre-loading on the shorter shock spring and mark it with a permanent marker so you know the short one from the long one. Or, if you race with other folks who use the same brand and type of springs as you do, compare them and swap so that everyone has springs of equal length.

- Are the travel spacers (limiters) the same thick-

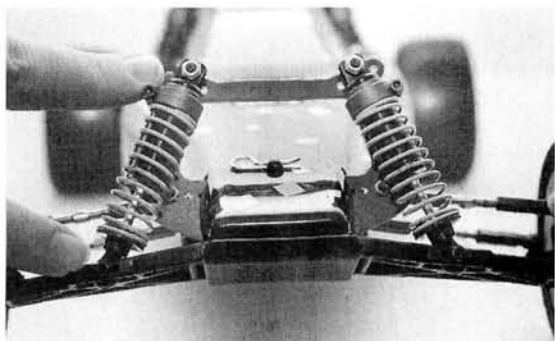


**While you're at it, measure the lengths of all your shock springs. Are the pairs all the same? If not, take this into account when you pre-load them.**

and rear tires off the ground at the same time when you check the car or truck for tweak.

Remember, you have to lift the chassis at its center point (measured from left to right, not front to back), and all the equipment you usually run on the track has to be installed. (This technique won't work if the motor and batteries aren't in place.) Check your car or buggy regularly, and you'll fly straight and true—right into the winners' circle!

\*Addresses are listed alphabetically in the Index of Manufacturers on page 201. ■



**When you re-install the shocks, be sure that you use the same holes on both sides of the car, top and bottom.**

# TEAM SECRETS

## THREE SPEED CONTROLS IN ONE!

**Last issue you were introduced to the new Novak Cyclone Programmable ESC. This Team Secrets explains the Cyclone's three profiles and recommended uses.**

The Cyclone incorporates three pre-set, user-selectable throttle profiles to suit individual driving styles and vehicle types. Accessed with the One-Touch Set-Up™ button, these profiles give the racer extreme flexibility.

The changes in the profiles occur at dead band, minimum drive, and drive frequency (refer to graph below). **Dead Band** is the space between brake and throttle, centered around neutral. **Minimum Drive** is the percentage of throttle at which the throttle begins. **Drive Frequency** is the frequency at which the motor speed is controlled, and has a great effect on the feel and application of power.

PROFILE 1	Dead Band	Min. Drive	Drive Freq.
	9%	6.25%	5.86 kHz

This profile is the closest to other Novak speed controls. Of the three profiles, Profile 1 provides a wide dead band, a minimum drive suited best for tracks with moderate traction, and a drive frequency to provide smoother operation than a standard speed control.

PROFILE 2	Dead Band	Min. Drive	Drive Freq.
	6%	10%	5.86 kHz

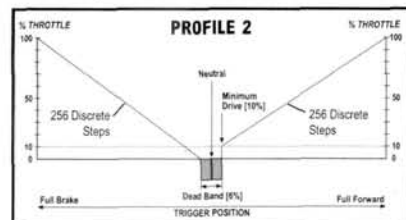
Profile 2 is ideal for higher traction tracks, or heavier vehicles that require more throttle due to the higher load. Basically, Profile 2 is an aggressive Profile 1.

PROFILE 3	Dead Band	Min. Drive	Drive Freq.
	4%	1.5%	15.6 kHz

Of the three profiles, Profile 3 provides the most feel for controlling lighter vehicles, vehicles that are driven on traction limited surfaces, or situations that require very precise throttle control.

As you can see, the Cyclone is capable of handling many different situations and requirements, all by changing Profiles through the One-Touch Button.

### Experiment and Have Fun!



**Check out the new Novak Cyclone Programmable ESC at your local hobby store and experience the difference!**

**NOVAK ELECTRONICS, INC.**  
18910 Teller Avenue, Irvine, CA 92612  
• (714) 833-8873 •

Advertisement





## TRUBLE SHOOTING

by George M. Gonzalez

### A Temperamental Monster

I recently purchased a new Traxxas Stampede and have been running it daily. Overall, I've been happy with the truck's performance, but I've had problems with its steering system. For some reason, I keep breaking the steering servo's output gear that mates with the servo saver. I've already replaced the gear twice, and now I'm afraid to drive the truck hard. Would installing a metal gear servo remedy this problem?

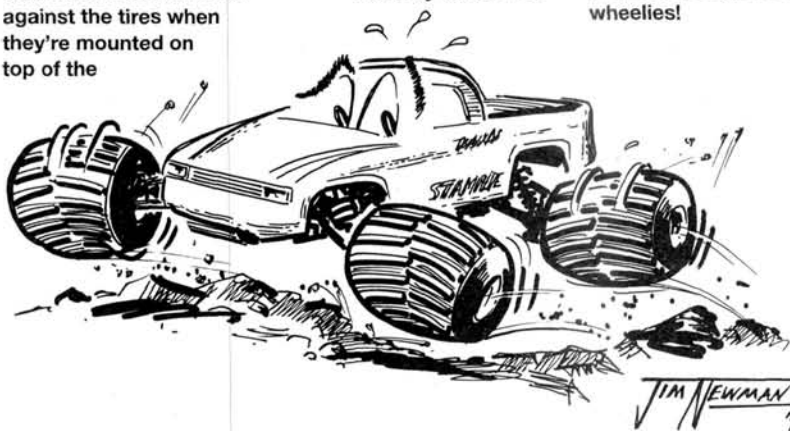
**SCOTT SILVERMAN**  
Richmond, OH

Scott, I have a quick fix for your truck's steering problem. And no, you don't have to buy a metal gear servo. I've found that the Traxxas servos work well. The Nitro Stampede uses a direct-drive system (no bell-crank). Because of the steering servo's uncon-

ventional mounting, the extra-long steering tie rods must pivot while at extreme angles. I've found that if I mount the steering-rod ball ends on top of the steering blocks instead of underneath them, it helps keep the steering rods more level when at normal ride height as well as when the suspension is completely compressed.

The only problem is that the ball ends will rub against the tires when they're mounted on top of the

steering blocks. Pick up some thin, 5mm axle shims, and install them on the axles before you mount the wheels. Doing so will provide ample clearance, and the ball ends won't rub against the tires. HPI sells cool-looking chrome Super Star wheels (part nos. 2125 front, 2160 rear) that, when mounted, actually give the truck a much wider stance. This not only makes the



*If you have a technical problem that your hobby shop or racing friends can't resolve, give us a shout at Radio Control Car Action, and we'll see if we can chase down an answer for you. Questions should be of a technical nature and should be addressed to Troubleshooting, Radio Control Car Action, 100 East Ridge, Ridgefield, CT 06877-4606. We regret that, owing to the tremendous number of letters we receive, we can't respond to every one.*

truck more stable, but it also provides ample clearance to mount the steering-rod ball ends on top of the steering blocks. This should take care of your steering problems, so go do some wheelies!

### "Dumpy" The Touring Car

Hey there, troubleshooters! I've got a problem with my HPI RS4 touring car. I went parking-

lot racing recently for the first time, and I was very disappointed that my car couldn't complete a 4-minute heat. I was running a Maxtec 13-turn double motor, 1700 SCRC batteries and a Novak

Tempest ESC.

I've tried dropping a few teeth on the pinion gear; this helped, but my car still dumps

prematurely, sometimes on the last lap—very annoying. I know my batteries are good because I use them in my Losi Double-X CR without any dumping problems. So, what gives?

**JOE DEMARCO**  
Marina Del Rey, CA

Joe, I do have a couple of suggestions. You didn't mention whether your car is equipped with bearings. If you race the car with the stock bushings, be sure to grease them slightly before you race. The RS4's drive train uses a lot of bushings, and to bind the entire system all it takes is one sticky bushing. If you can afford it, pick up a set of bearings. Your car would thank you if it could.

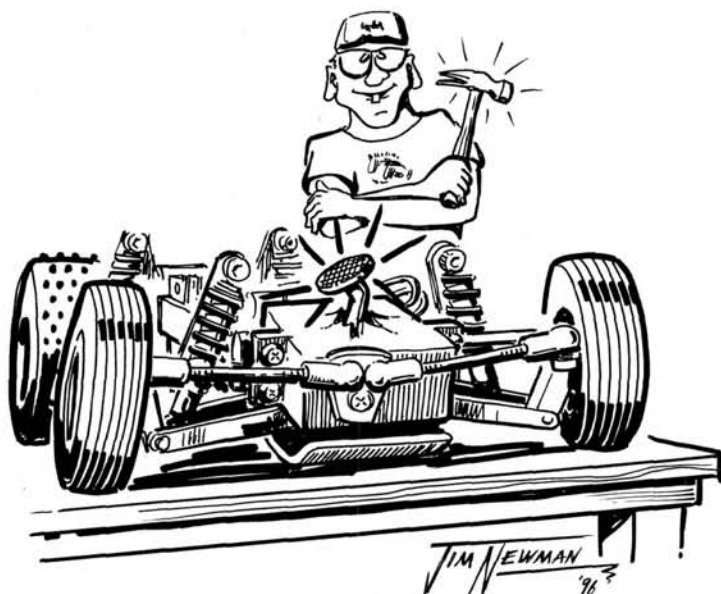
How's the car's belt tension? If the belt is too tight, the drive train will develop a lot of friction. To adjust the belt tension, loosen the upper belt-pulley's mounting screw, and lower the belt pulley slightly. You want the belt slightly loose, not tight. How about gear mesh? You want the pinion gear to make contact with the spur gear, but be sure to allow enough slack so you can rock the spur gear back and forth slightly. If your gear mesh is too tight, the motor won't work efficiently, and this will reduce its useful life and overheat all your electronics. Good luck.







## TROUBLE SHOOTING



### Mario Gets Swapped

I recently got into R/C when I traded my older Super Nintendo for a mint-condition Team Losi LX-T and all the necessary radio gear and electronics. The truck works great, but for some reason, the steering servo won't stay put. I have reapplied the double-stick tape, but the servo works its way loose after a couple of battery packs. Would gluing the servo to the chassis with some CA or plastic model cement solve my problem, or do I need to buy servo mounts?

**TY BOLIN**  
Cerritos, CA

Ty, I wouldn't suggest that you glue the servo down with CA or plastic model cement. If you ever need to replace the servo, you'd have to replace the chassis, too, because once the glue has set, you'll never be able to remove the servo. Here's a sure-fire way to mount your servo. First, use denatured alcohol or motor spray to clean the servo's mounting

surface and the area on the chassis where the servo will be mounted. Cut a piece of servo tape larger than the servo's mounting surface, and attach it to the servo; trim off any tape that overhangs.

Now mount the servo on the chassis. Once the servo is in place, let the servo tape "cure" overnight. As extra security, apply a bead of Shoe-Goo along the edges of the servo and let it dry overnight. Now you'll have a servo that will stay put but can still be easily removed with a flat-blade screwdriver.

### A Magnet For Curbs

I'm having a problem with my MRC MT-10M truck. Every time I run into something, its caster blocks break. I've replaced them on both sides of the truck, but I'm getting tired of this; in fact, I always have a few spares in my toolbox, just in case. Are there any hop-up caster blocks for this truck? If not, is there a way I could beef-up the stock units? Thanks in advance for your help.

**ALAN COLLINS**  
Las Vegas, NV

Alan, are you jumping speed bumps or just ramming into curbs? The stock caster blocks (uprights) on the MRC MT-10M are molded of a very rigid material. The truck's big tires put a lot of strain on the suspension parts and frequent crashes will most definitely cause some problems. I had the same problem with my MRC MT-10S stadium truck when I converted it into a monster truck by mounting some big

monster-truck tires. The stock caster blocks worked fine when the truck was a stadium racer, but as soon as I put on those big tires, I, too, started to break caster blocks.

I bought some 30-degree Associated blocks that were designed for the company's RC10T racing truck, and I modified them to fit on the MRC truck. The Associated units are made of a softer nylon material that resists cracking. You'll have to grind the Associated blocks with a shop file or Dremel tool slightly to make them fit on the MRC truck's suspension arms, but the Associated blocks will slip right onto the MRC's hinge pins. Give it a try.





thrash  
TEST

1/10 scale gas



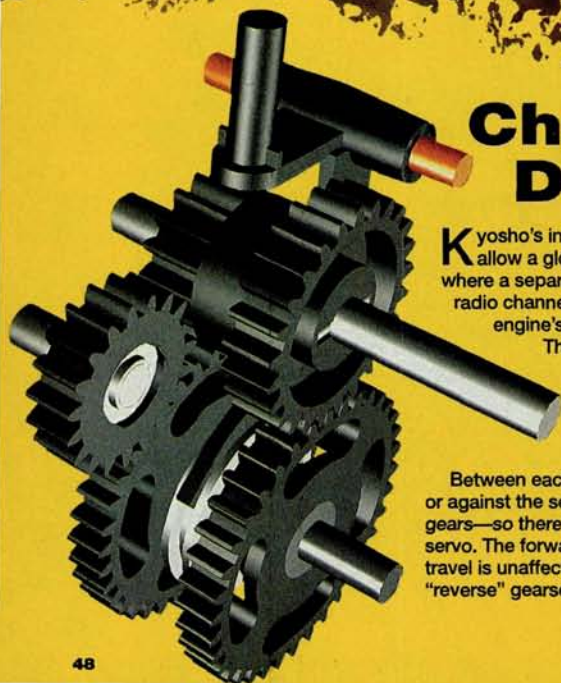
# Rumblevagen

## Changing Directions

Kyosho's ingenious Quick Reverse Clutch (QRC) transmission is the first device to allow a glow-powered vehicle to change from forward to reverse. I can think of one example where a separate electric-motor-driven reverse allowed you to back up (slowly!), but this required a third radio channel, and who wants the additional weight of a separate motor? Kyosho's QRC uses the glow-engine's power to provide reverse without the need for auxiliary equipment or a third radio channel.

The QRC contains two separate gearsets—one for forward travel, the other for reverse—driven simultaneously by the engine. Here's how it works: forward travel is provided by the first gearset, which comprises a top gear and a larger bottom gear. The second gearset has three gears: a small top-gear, a slightly larger middle-gear, and a large bottom-gear. Because of the middle, or "counter" gear, the bottom gear of the second gearset rotates in the opposite direction to that of the first gearset.

Between each of the "bottom" gears is a clutch disk, which is slid against the first gearset for forward travel, or against the second gearset for reverse. The clutch disk's pin slides into a slot in either one of the bottom gears—so there's no teeth to mesh and no gears to strip. The clutch disk's position is controlled by the throttle servo. The forward gearset is engaged whenever the throttle servo is in the forward position (the servo's range of travel is unaffected by the QRC tranny). When the throttle servo is in the reverse, or brake position, the second, "reverse" gearset is actuated. —Frank Masi







# KYOSHO Field Baja Beetle

by David Ditner

**W**HAT AN INNOVATION! This new kit packs a mother lode of trick features: four-wheel drive, Kyosho's\* GS11X pull-start engine, super-cool drive train layout and brand-new reversing tranny! You read it right, shift this bad boy into reverse to get yourself out of trouble or to "rowdify" your freestyle driving repertoire. The Baja Beetle has something no other nitro-burning R/C car has—a unique clutch system that allows you to quickly shift between forward and reverse using an ordinary 2-channel radio system! The first question that comes to mind is, "How well does the tranny handle abuse?" Let's just say that the good folks at Kyosho tried to munch it by slamming from forward to reverse and to forward repeatedly, and the car did so without losing a single (gear) tooth! The Baja Beetle is designed from the ground up, with some other tripped-out things you just haven't seen in any R/C car before. Read on to catch the rest of the scoop!

## KIT FEATURES

The most prominent feature of this vehicle is the reversing tranny. The Quick Reverse Clutch (QRC) comes fully assembled. I was impressed by the way it spun quite freely—no binding in this gearbox! If you spin the input gear of the clutch mechanism with one hand and shift the reversing lever with the other, you'll get super-smooth transition from forward to reverse. I'm talking *way* smooth. I had a couple of my R/C buddies take a look at the tranny to see what they thought. They were impressed and bewildered, and they spun it back and forth with that "how does it know?" look on their faces.

Besides being the only gas R/C car in the U.S. with reverse, the Baja Beetle chassis layout is unlike any other R/C car on the market. The QRC is set in the middle of the chassis plate. When I say "in" the middle of the chassis, I mean that the QRC fits through a hole smack-dab in the center of the chassis. On the top of the chassis plate lies the engine/clutch assembly, which drives the QRC. The QRC's gears mesh downward and through chassis, and the drive-shaft output lies below (under) the plate! It looks a lot like a real 4x4 with massive drive shafts under the chassis, going from the transfer case to the drive axles. Both front and rear drive axles, by the way, sport the beefy, sealed-ring-and-pinion drive system and two sealed, planetary-gear differentials found in more expensive vehicles. The Baja Beetle even sports a sealed radio box to protect the receiver from fuel and dirt!

## specifications

**SCALE** ..... 1/10  
**LIST PRICE** ..... \$399.99

### DIMENSIONS

Length overall ..... 15.7 in.  
Wheelbase ..... 10.4 in.  
Width (F/R) ..... 11.4 in.

**WEIGHT** (gross, RTR) ..... 4 lb., 3 oz.

### CHASSIS

Type ..... U-shaped channel  
Material ..... Duralumin

### DRIVE TRAIN

Type ..... Shaft-driven, reversing 4WD  
Primary ..... Clutch bell/spur gear  
Transmission ..... Dogbone/axle  
Differential(s) ..... F/R gear diffs  
Bearings/bushings ..... Metal bushings

### SUSPENSION (F/R)

Type ..... Ind. A-arm with upper link  
Damping ..... Oil-filled, coil-over shocks

### TIRES (F/R)

Type ..... Semi-pneumatic, pin-spikes

### WHEELS (F/R)

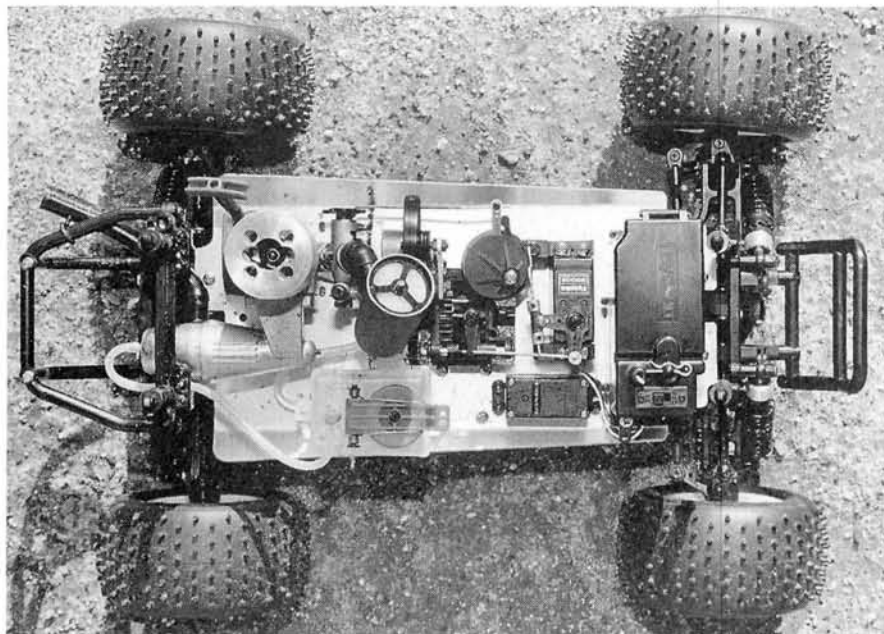
Type ..... One-piece plastic  
Dimensions ..... 2.4x1.7 in.

### POWERPLANT

Engine ..... Kyosho GS11X, .10 c.i.d.  
Pipe ..... Expansion chamber  
Carb ..... Rotary-barrel



## KYOSHO FIELD BAJA BEETLE



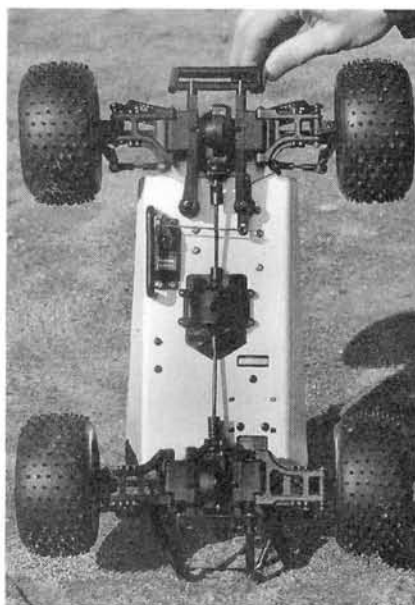
The Baja Beetle has a 4-wheel, independent suspension that utilizes four oil-filled, ring-lock adjustable shocks. The plastic-bodied shocks use a one-piece piston and shaft design. Although this design doesn't allow you to change pistons, you can still adjust the damping by using shock oil of different viscosities (thicknesses). The shock bodies have the seals already installed, and bladder caps make for smooth damping. The one-piece plastic camber links take much of the tediousness out of the assembly process. The steering rods, however, are adjustable.

Another totally cool innovation found on the Baja Beetle is the body-mounting system. It doesn't use the all-too-easy-to-lose hood pins!! The body posts sport spring-mounted body washers, which means there will be no irritating body rattle! On the top of the posts are camlock-type hold-downs. Flip 'em up and put the body on, clip 'em down, and they lock the body in place!

Kyosho's GS11X engine is a study in durability. Ask anyone who races Kyosho's sedans what they think of it, and they'll go as far as calling it bulletproof! It has a

*Left: the Baja Beetle's layout is simple, with plenty of room to work. The chassis is made of aluminum alloy; it's strong, and it does a good job dissipating heat and keeping the engine cool.*

*Below: part of the QRC tranny protrudes through the bottom of the chassis and provides a scale-looking 4WD system. The steering servo and linkage also protrude through the chassis and are exposed to the elements, but a molded bar protects the servo (somewhat) from scraping the terrain.*



## Building & Setup Tips

Kyosho's instructions are typically excellent, and this was no exception. I received the European instructions with the kit because the U.S. version hadn't yet been printed. I found the instructions very easy to follow. The steps were labeled with concurring bag numbers and true-to-scale screw diagrams, which made finding the right parts a breeze. I can't emphasize enough the importance of using this stuff in gas cars. These little engines make the chassis vibrate like crazy, and if you don't use thread-lock on all metal-to-metal screw contacts, your car will literally unscrew itself into pieces!

- When you assemble the gearbox (front and rear) halves (step 8), be careful not to over-tighten the gear-case screws, because that may cause the gears to bind. When you have completed this step, spin the input half on each diff case to ensure smooth operation. If the gears bind, loosen the screws little by little (make sure there are no gaps between the gear-case halves) until the gears spin relatively smoothly.

- To properly fit the muffler into place (step 25) you may—as I did—have to loosen the screw on the back of it and rotate the outlet so it faces the engine.

- You will probably have to cut the bottom of the rear body posts for the body mounting system to fit properly (step 41).

- Poke or cut holes in the middle of the tire treads or on the insides of the wheels (step 42). By doing this, you allow air to re-enter the tire quickly, thus minimizing tire distortion after hard hits or jumps.

## THINGS YOU'LL NEED

- 2-channel radio system with 4-cell AA alkaline battery holder.
- 12 AA alkaline batteries.
- Fuel.
- Pit (fuel) bottle.
- Glow igniter.
- Paint.
- Glow-plug wrench.
- Phillips screwdrivers (small, medium and large).
- Needle-nose pliers.
- Wire cutters.
- Hobby knife.
- Instant CA.
- Loctite.



## KYOSHO FIELD BAJA BEETLE

### FACTORY OPTIONS

sturdy pull-start system and machined-aluminum heat-sink cylinder head. The carb has only a high-speed needle—no low-end mixture is provided—and it's topped off with a heavy-duty air filter. There is even a belt-driven fan unit to keep the engine cool!

This is one of the most technically impressive, cool-looking chassis on a non-competition car that I've seen since the Tamiya Mountaineer. Everyone who has seen my kit really digs it—racers and novices alike! It's guaranteed to get many "wows" just sitting on the shelf!

### TEST GEAR

Here's what I used to test the Baja Beetle:

- Futaba\* Magnum Jr. Radio;
- S148 servos;
- Dynamite\* Blue Thunder break-in fuel.

### PERFORMANCE

The GS11X started immediately with just a few yanks on the cord. One of the reasons pull-start engines tend to get a bad rap is that people try to start them as if they were lawnmowers. For those of you who have had problems breaking the cord, pull it out about only a foot and get your foot off the car. You never want to pull the cord all the way out; you will break it.

The Baja Beetle is relatively quiet, for a gas car. By quiet, I mean that although you will still enjoy the sound of the car, you are less likely to disturb your neigh-

- 5X10 ball bearings—part no. 1901 (KYOC2197).
- 5X8 ball bearings—1902 (KYOC2204).
- 8X14 ball bearings—1911 (KYOC2217).
- Steel-diff bevel gear—FZW-13 (KYOC2341).
- Steel-diff pinion gear—FZW-15 (KYOC4800).
- Shock-spring set—W-5013S (KYOC5863).
- Universal swing shafts—W-5061 (KYOC6127).
- Ultimate shocks—W-5097 (KYOC5843).
- Sport shocks—W-5141 (KYOC3610).
- Teflon™ touring shocks—W-5153 (KYOC5699).

reverse and back again, and it suffered no breakage! Every once in a while, the car would hesitate when switching from forward to reverse and vice versa. This is normal as the pins and slots in the QRC may take a second to line up. Also, changing directions on steep inclines or declines may be difficult at times.

I was a bit concerned that I'd damage the low-lying drive train while romping through the dirt, but I had no problems. I wouldn't recommend running the car on rocky surfaces, because you will probably remove some much-needed driveline components in a most abrupt and ugly fashion. You will also want to refrain from throwing an evil .12 O.S. or comparable engine in the Baja Beetle. The QRC was not designed to handle that kind of raw power. If you want more speed, ball bearings and a tuned exhaust pipe are the better way to go. Hey, I'm a speed freak (speed equals joy) and techno-geek, and I found this car to be quite fun right out of the box.

### FINAL THOUGHTS

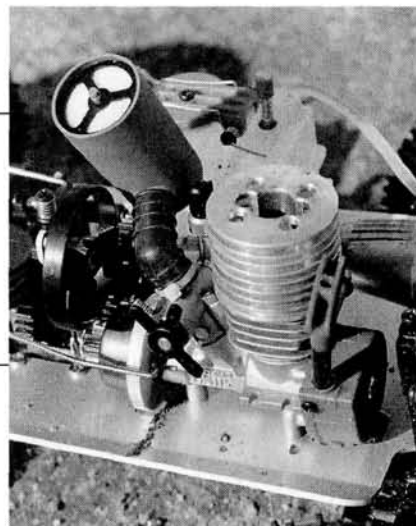
This kit is yet another winner from Kyosho. Although the vehicle is not intended for competition, racers who saw it wanted it. The reversing tranny is an obviously bitchin' innovation. It's another benchmark in a long line of technical advancements made by

### Likes

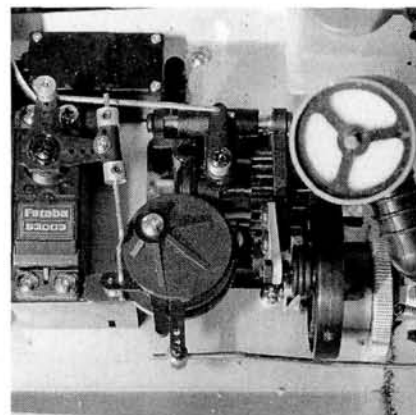
- Gas power with reverse.
- Awesome chassis layout.
- Beefy (extremely durable).
- Sealed radio box.
- Excellent parts fit.

### Dislikes

- No brakes, but I'll live—this car is *most cool*!



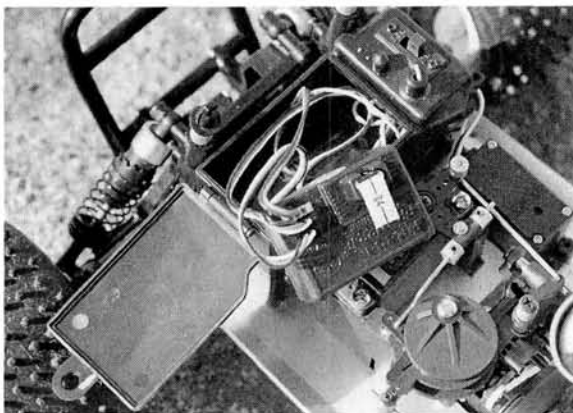
*The fan-cooled, Kyosho GS11X engine ran smoothly once the proper needle adjustment was found. After six tanks of fuel, however, we noticed that a small amount of fuel had leaked from the front crankshaft bushing onto the chassis. Dig that air filter! Some staffers affectionately dubbed it "Popeye's pipe."*



*The heart of the Baja Beetle is its QRC reversing transmission—the first of its kind in a glow-powered vehicle. The Beetle's throttle linkage was surprisingly easy to install. Note the carb linkage's built-in throttle-return spring. It worked superbly!*

Kyosho. The car has many other unique features that make it highly desirable to just about anyone. If this article has you interested, wait until you see the Baja Beetle in person! Take my word, this kit is well worth it.

*\*Addresses are listed alphabetically in the Index of Manufacturers on page 201.*

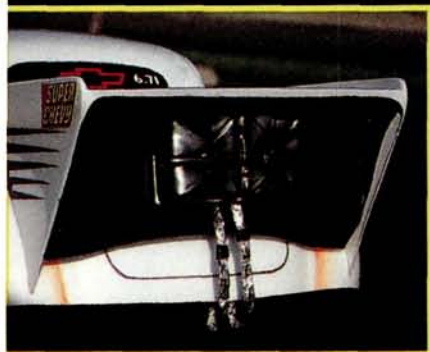


*A molded radio box—identical to the one used on Kyosho's world-champion Inferno MP-5 buggy—protects the receiver and battery pack from dirt and moisture. For tidy installation, all the servo leads can be coiled inside the box.*





The detailed Chevy small-block features several building options, including this classic, old-style Hilborn Injector setup. I opened the hood a little more so that the rocker covers would stick out, and that lets me "slam" the nose down even more.



Out back, the chute packs were detailed with heavy-duty lines running to the chassis. If they attached the chutes to the bodywork only, the drag would rip the body off!



Six two-barrel carbs over a 6-71 blower? Yep. And gas mileage would be measured by the tankful. This engine can also be swapped right into the '37 frame rails.

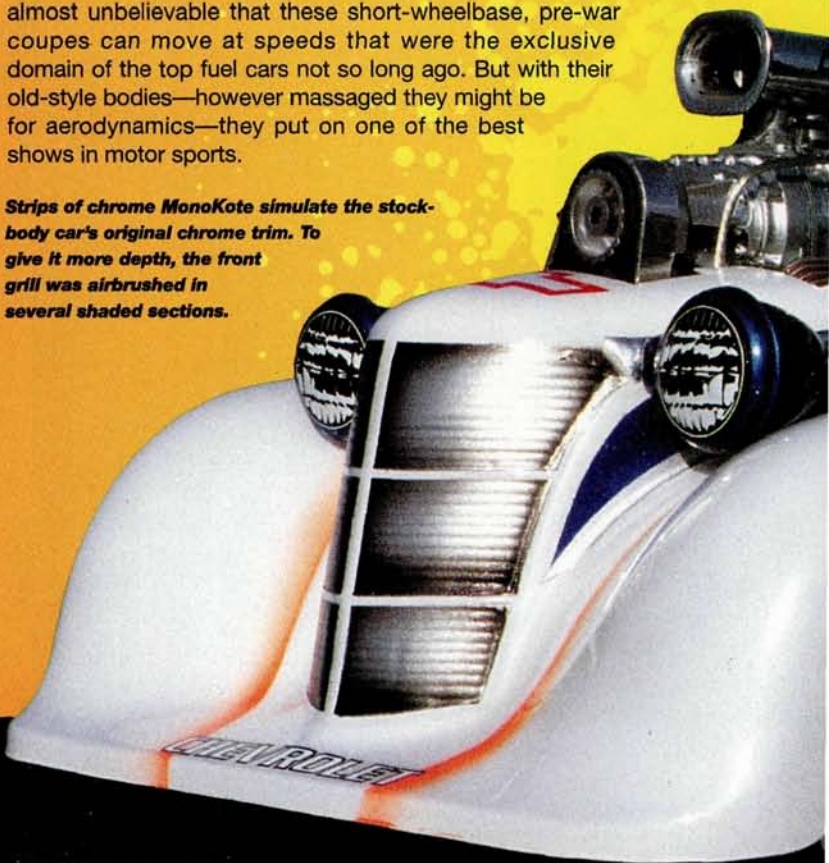
# Detailing Parma's '37 Chevy

by Mike Ogle

**T**HE GUYS IN OHIO have done it again! With the '37 Pro (street or mod—your choice), Parma\* has captured the look of the classic pre-war competition coupe and introduced another highly detailed engine kit for our building pleasure. After I had taken a look at the red-hot '37 Chevy kit, I knew I wanted to build one in the battle dress of the International Hot Rod Association's (IHRA) Pro-Mod class. These 500ci-plus monsters breathe alcohol and nitrous oxide—laughing gas—but their on-track antics aren't at all funny. They're simply awesome!

As their engines bellow in an apocalyptic roar, these full-bodied coupes yank their front wheels into the air off the starting line and click off over 200mph in the quartermile in about 7 seconds. It's almost unbelievable that these short-wheelbase, pre-war coupes can move at speeds that were the exclusive domain of the top fuel cars not so long ago. But with their old-style bodies—however massaged they might be for aerodynamics—they put on one of the best shows in motor sports.

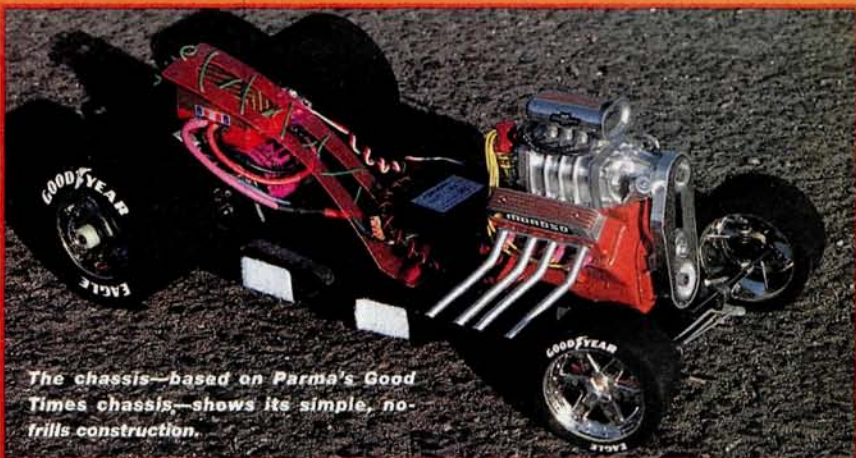
*Strips of chrome MonoKote simulate the stock-body car's original chrome trim. To give it more depth, the front grill was airbrushed in several shaded sections.*







A Trinity drag motor and Tekin Rebel speed control were used to motivate the pre-war track burner. Note the inboard antenna-wire loom, which is supplied by Parma.



The chassis—based on Parma's Good Times chassis—shows its simple, no-frills construction.

The Parma kit is the latest in a unique series of releases that began during the early '90s with the introduction of the Hemi Coupe. As you may recall, it featured a realistic, multi-piece Lexan body/undertray, Parma's venerable Good Times (dyn-o-mite!) chassis setup, and a super-detailed Hemi engine that was, in fact, a kit in itself. And, boy, did it send scratch-builders into a frenzy! Finally, the concours-conscious had a realistic engine kit, and we've seen it shoehorned into everything from NASCAR stockers to

multi-engined pulling tractors. Parma seized the moment and quickly followed up with its Hemi Vette—another kit built on the same principles—which has an even better, more complex multi-part body. And although it didn't come with it, everyone figured that Parma's '29 Roadster and the Hemi engine were another match made in heaven. Remember Project '29?

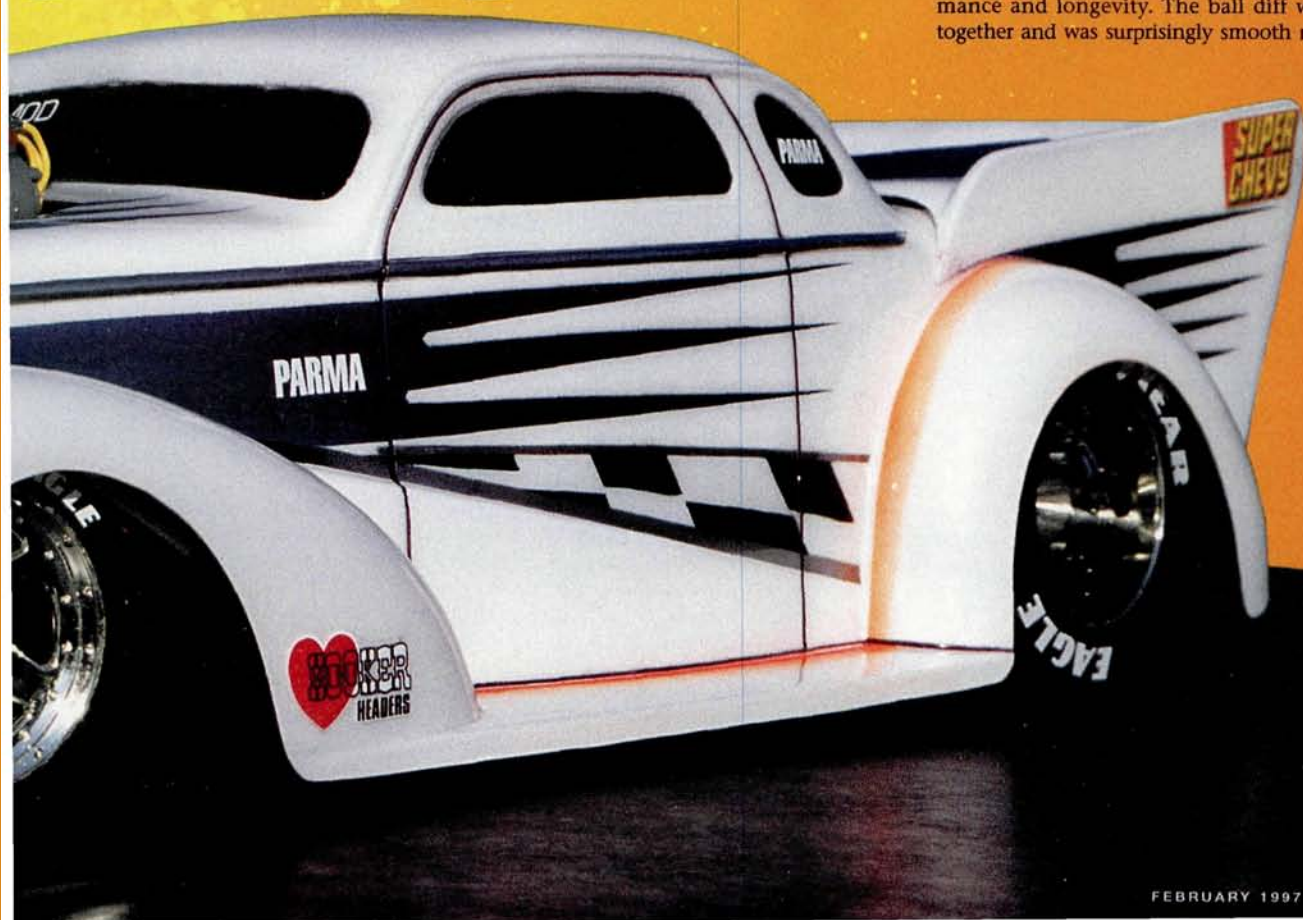
#### THE KIT

Well, the Parma '37 Chevy kit is yet another step beyond. You get another

beautiful multi-piece Lexan body, the same Good Times chassis, and not one, but *two* completely new engines—and this time they're unmistakably small-block Chevrolets! This kit was worth the wait!

- **Basic black.** As I mentioned, the old bow-tie's chassis is the familiar Good Times type, and this latest incarnation features black G-10 fiberglass instead of the earlier, odd, greenish offerings that date back to the "Days of Thunder" stock-car kit. The rear engine pod is a one-piece stamped affair that's pretty durable (although it is aluminum), so if you take a hit to the rear of the car, check to make sure the sides don't get tweaked and bind the rear axle. I highly recommend that you install a set of rear-axle bearings here for improved performance and longevity. The ball diff went together and was surprisingly smooth right

## Blown Bowtie





## DETAILING PARMA'S '37 CHEVY

from the get go, probably owing to the machined-aluminum diff hub and ultra-solid steel axle. There is no real rear suspension, such as a floating pod or T-bar, but, hey, isn't this supposed to be a drag-style, straight-line racer? A solidly mounted rear pod will put down major horsepower just fine, thank you, as any serious R/C drag racer will tell you!

I outfitted the coupe with a Tekin\* Rebel speed control with reverse for backing up from burnouts and an early Trinity\* drag motor of long-forgotten low winds. Rest assured, it's ridiculously overpowered! An Airtronics\* 27-band radio and steering-servo combo completed the electronics package.

The front end is a simple, yet totally functional fiberglass front beam with conventional coil-over-kingpin suspension. Again, if you're going racing, invest in front wheel bearings. Bearings are all you really need to have a strip-worthy rolling chassis.

• **The "coupe" de grâce.** Parma's '37 Chevy body is basically a single, stock-looking piece with the optional additions of twin, front-headlight buckets and a two-piece,



**With the supplied parts, you can actually build two complete engines and still have some left over. I built the second engine just for display.**

rear, monster deck wing. You can build the kit in a variety of ways: make it a somewhat stock-looking mild street cruiser (you don't really even have to put in the engine, as the hood is fully enclosed) or a full competition Pro-Mod setup. The enclosed Lexan undertray helps when mounting the body and looks a heck of a lot better than having a lot of open daylight under the body panels. The body detail is up to Parma's usual standards, with good body-line definition and a heavy gauge pull, which I mic'd out at around 0.025 to 0.030 inch in thickness around the base. Weight be blasted! When I put this much time and detail into a body, I want it to be durable!

I liked the paint scheme shown on the side-panel box art, but I elaborated a bit on the theme and added Pactra's\* Candy Blue and Candy Purple scallops to the pearl

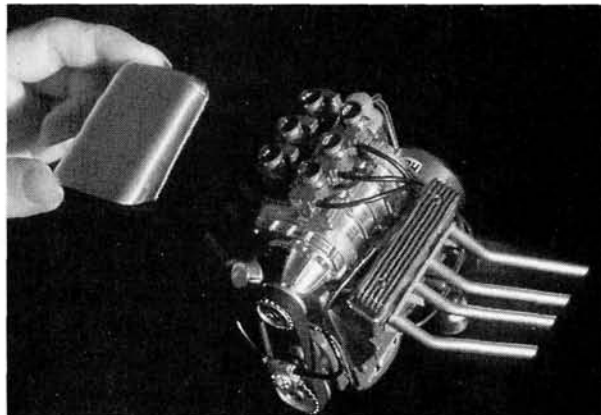
white body around the hood, rear deck sides and engine cut-out. It's a very simple, clean and somewhat "retro" paint scheme, but it very much accents the classic lines of the coupe body. I used chrome MonoKote\* in very thin strips to simulate the original "stock" trim, and I added body lines with an ultra-fine-point Sharpie permanent marker.

### • Now, about that

**engine.** The most complex and detailed step in the assembly is the plastic Chevy engine kit. Mine came molded in two colors, black and a silver gray, and this required some painting to get the desired look. I strongly urge you to paint the polystyrene-plastic molded engine with paint that's for regular plastic models, such as Testor's\* line of military "flat" paints, instead of paint for polycarbonate (Lexan) bodies. The model paints will stick better, brush on better and dry better, and they're available in a great selection of useful colors, simulating steel, aluminum and even rust! Parma includes more than enough parts to build two complete engines, with the optional, conventional top-mounted blower, front-draft blower, or three to six two-barrel carburetors. Sharp builders will also spot a competition-style seat and an old-style driver's fire mask on the parts trees. I don't know where Parma keeps

coming up with these wonderful engines, but I love 'em!

I built two engines that I could interchange in the '37 coupe—a top-mounted blown version with the old-style Hilborn Injector scoop and a "Six Deuces" on top of a blower (induction-overkill) version. This engine's block was painted blue, with rocker cover fins to match. I know, I know; that's a Ford color (almost sacrilege in the automotive world), but it went better with the car's paint scheme. It's my party, and I'll paint it like I want to! Up top, I first painted the six carburetors with a flat aluminum, and then I "flowered" a thinned-down, flat, black "grime" over them to give that gritty, cast-metal look. I modified the included hood scoop to pop on and off these carbs, whose open barrels I detailed with small pieces of gold, wire-mesh screen-



**With the top scoop removed, you can see the wire-mesh detail added to the throats of the carbs. The black fuel lines, blue plug wires and rubber drive belt were all kit-supplied.**

ing. I routed the included black-rubber fuel lines from the front-mounted fuel pump to all six carbs. The old-style magnetos on both engines were detailed with red-painted tops (as almost all of the full-scale versions featured, as I recall) silver mag bodies, and eight spark-plug wires. I added spark-plug "boots" made from small, 1/4-inch sections of silicone wire insulation and slipped them over the wires where they join the plugs at the cylinder heads. A few strategically placed decals gave an added touch of authenticity on some of the engine components.

The Hilborn Injector and blown Chevy engine was painted the "proper" Chevrolet orange-red, again with matching rocker-cover fins. Many of the pieces on this engine were given an authentic aluminum look using Bare-Metal detailing foil, an adhesive-backed, thin-aluminum foil used by model car builders to simulate chrome trim.

• **Rolling stock.** The '37 comes with a set of six-spoke chrome wheels, on which are mounted some of the fattest, biggest foamies ever to grace any kit. The rears are a full 3 3/4 inches in diameter and just under 2 inches wide! Call Jenny Craig! The front wheels are of the same, attractive six-spoke design, but much shallower and shod with some more normal-sized (just under 2 1/2 inches) front tires. This "big-n'-little" combo gives the coupe part of its aggressive, nose-down stance.

### FINAL THOUGHTS

When I finally mounted the finished body on the chassis (using Velcro®-brand fasteners), the total package came together. Parma has, once again, given R/C enthusiasts with a desire for realism a classic American car kit. Like the old reliable Chevy small-block engine, Parma's '37 Pro is an excellent basic design that you can make as mild or as wild as you want.

\*Addresses are listed alphabetically in the Index of Manufacturers on page 201. ■







**thrash  
TEST**

1/10 scale electric



## TAMIYA **Mazda Miata and Honda S800**

by Peter Vieira

**L**IKE THE manufacturers of full-size cars, Tamiya knows how to get the most out of a chassis. The protean Frog chassis was recycled into the Subaru Brat and gave life to the Blackfoot. The popular TA01 touring car chassis and its successor, the TA02, sprang from the Manta Ray, which lives on in the Dirt Thrasher. But the new king of versatility is the M-chassis.

Initially offered as a front-drive platform beneath a Mini Cooper body shell, the diminutive M01 piqued the curiosity of the R/C crowd with its swappable front and rear bulkheads. Both ends of the car will accommodate the steering assembly, and this makes rear-wheel-drive conversions a snap—as well as dual-motor 4WD creations, for you gear-melters out there. Tamiya hasn't gone that wild yet, but it has released some beautiful scale kits built around the little M. "Retro" has been a theme, with the Mini Cooper Monte Carlo, Fiat Abarth and Renault Alpine delivering the "blast from the past" goods. The sprightly '65 Honda S800 tested here con-

tinues the "way back when" theme, but not all M-cars are vintage-class machines. Case in point: the other half of this "Thrash Test," Tamiya's Mazda Miata—or Eunos Roadster, as it's known in the Land of the Rising Sun.

### KIT FEATURES

Both cars are built around Tamiya's rear-drive M02 chassis; the Miata received an M02M designation because of its longer wheelbase configuration. Because the cars are identical except for the wheelbase, it should be interesting to see which handles better in specific driving situations; we'll find out later. In the meantime, here's what the cars will offer you on the bench.

You've heard it before, and danged if you aren't going to hear it again. Tamiya cars come artfully packed with all their parts neatly bagged and labeled. You will *not* open them until you get to the step that says, "You may open bag C." Of course, you *are* allowed to immediately open the bag with those cool rims and tires, no matter what step they're in. (When you lose the desire to do this, quit the hobby.) Amidst all the injection-molded eye candy, you'll also find Tamiya's beautifully illustrated instructions. When it comes to clear, concise instructions, you can't beat the big T. Before you tear into the kit, take some time to read through each step; the time you spend reading will be

# MISSION: M-







PHOTOS BY PETER VICINA

worthwhile if it saves you from having to tear down a big chunk of work to fix an error.

• **Tires and wheels.** If you go right for the wheels and tires, as I do, you'll find some very soft super-grip meats for the rear wheels, and harder Tamiya-logo tires for the front hoops. To help them keep their shape, both pairs of tires are supplied with very nice foam inserts; as these tires feature taller sidewalls than other M-kits—such as the Mini Cooper—the foams are a definite plus. Needless to say (because these are Tamiya cars), both models feature accurate, crisply molded scale wheels. The plastic is a nice silver gray, which is scale enough for me; if you want that polished-alloy look, you can easily paint them bright silver.

• **Transmission.** What delivers the power to those wheels is a unique transmission; it features a very smooth bevel-gear differential housed in an extra-wide diff case. "Extra wide" is about double the width of

whatever is spinning around in the bottom of your B2 or Double X tranny; the sucker is big! Equally massive is the top gear, which is molded to the spur gear. Unless your motor has "Briggs and Stratton" written on it, you won't wear out these gears. You should, however, keep an eye on the idler gear. This little donut with teeth isn't much bigger than the pinion that spins it, so apply a little lube, and keep the gear cover tight so the mesh doesn't get sloppy. On M-chassis cars, the gear cover isn't just a protective shell; it aligns the shafts of all the internals, except for the diff. If you so much as blip the throttle without it, you'll be looking for pieces. Attractively plated outdrives and all-metal dogbones round out the business end of each car (that would be the rear for both).

• **Suspension.** Up front, the Miata M02M and S800 M02 differ slightly in that the Miata's front bulkhead is about  $\frac{3}{8}$  inch longer than the Honda's. This is where the extra wheelbase comes from. Otherwise,

## SPECIFICATIONS

### MAZDA MIATA

**SCALE** .....1/10  
**LIST PRICE** .....\$234

#### DIMENSIONS

Length overall .....15.5 in.  
Wheelbase.....8.9 in.  
Width (F/R) .....6.25 in.

**WEIGHT** (gross, RTR) .....2 lb., 8 oz.

#### CHASSIS

Type .....Molded tub  
Material .....ABS plastic

#### DRIVE TRAIN

Type .....Sealed gear  
Primary .....Pinion/spur  
Transmission.....Dogbone/axle  
Differential(s) .....Gear diff  
Slipper Clutch.....none  
Bearings/bushings .....Bushings

#### SUSPENSION (F/R)

Type .....Fully independent horizontal shocks  
Damping .....Non-oil-filled, coil-over shocks  
with spring-assisted suspension arms

#### WHEELS (F/R)

Type .....7-spoke silver  
Dimensions (DxW) .....1.5x0.875 in.

**TIRES** (F/R) .....60D radial/60D super-grip radial

#### ELECTRICS

Motor.....540 stock  
Battery .....Not included  
ESC .....3-step mechanical

### HONDA S800

**SCALE** .....1/10  
**LIST PRICE** .....\$234

#### DIMENSIONS

Length overall .....14.1 in.  
Wheelbase.....8.3 in.  
Width (F/R) .....6.6 in.

**WEIGHT** (gross, RTR) .....2 lb., 9 oz.

#### CHASSIS

Type .....Molded tub  
Material .....ABS plastic

#### DRIVE TRAIN

Type .....Sealed gear  
Primary .....Pinion/spur  
Transmission.....Dogbone/axle  
Differential(s) .....Bevel gear type  
Slipper clutch.....None  
Bearings/bushings .....Plastic/bronze bushings

#### SUSPENSION (F/R)

Type .....Lower suspension arms  
with molded upper link  
Damping .....Non-oil-filled, coil-over shocks  
with spring-assisted suspension arms

#### WHEELS (F/R)

Type .....10-spoke, gray  
Dimensions (DxW) .....1.5 in.x0.875 in.

**TIRES** (F/R) .....60D radial/60D super-grip radial

#### ELECTRICS

Motor.....540 stock  
Battery .....Not included  
ESC .....3-step mechanical

# POSSIBLE



## Building & Setup Tips

Both cars are a breeze to build if you follow the instructions. The drafting-room guys at Tamiya have gone to a lot of trouble to make your life easier; don't let them down by blowing off their hard work. There are a few pointers I can add, however.

- If you plan to install the included mechanical speed control, open its bag first, and note the steps in the instruction manual that cover the unit's installation. Otherwise you'll wind up going back and undoing work you've already finished.

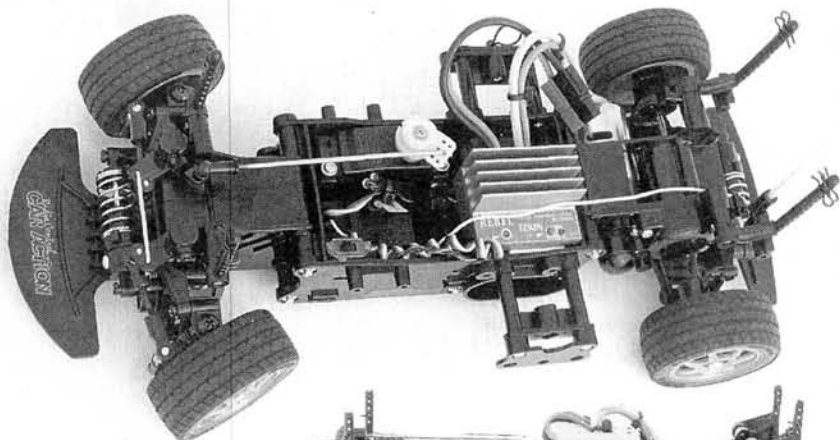
- Steps 2 and 11 call for you to install mounting blocks onto the front and rear bulkheads for the suspension arms and upper links. Make sure to fully tighten these pieces; the plastic is hard, and the screw can feel tight when it still has a half turn or so to go. It's no fun to open the bulkheads later if these parts are loose.

- The instructions call for grease on the dogbone ends; you're better off to leave them dry or to use a "dry" lube such as Paragon's Liquid Bearings. Otherwise, your drive train will soon be black and fuzzy with grime.

- Speaking of lubrication, try Aero-car's Super Speed gear lube on those big tranny gears. You'll have that whisper-quiet tranny of your dreams.

- If you plan to hardwire the motor, check the instructions to verify which lead is positive on the included motor, or else you'll be running backwards. If you want to run a competition stock motor in an M02 chassis, beware. The rear-drive configuration calls for a reverse-wind motor, so a conventional 24-degree motor won't work properly. For modifieds, just reverse the endbell and adjust the timing appropriately.

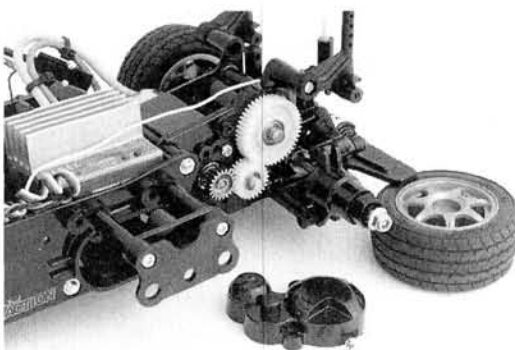
- It's been said before: applying the decals takes forever! Most "painful" are the slivers of black that form the window molding on both cars. I cheated and used 1/8-inch black pinstriping from the local automotive store. It's a little thick, but it's flexible and far easier to stick on.



*The Miata uses Tamiya's rear-drive M02M chassis, which has slightly longer wheelbase than that of the Honda S800.*



the front ends are identical, with steering linkages hung out in front of the bulkhead. It's a typical bellcrank setup, with a music-wire drag link and adjustable steering rods. They aren't turnbuckles, but they are



*Rear chassis with gear case removed: note the motor mount; three pre-drilled holes give you three pinion options with preset gear mesh.*

threaded—good 'nuff. As you build the front end, you'll notice that the front hubs and hub carriers are similar to those on Tamiya's 4WD cars; on front-drive M-cars, these pieces get the power to the ground, and they house the dogbones and outdrives. But because these cars are rear drivers, the front hubs carry only stub axles instead of outdrives.

### Likes

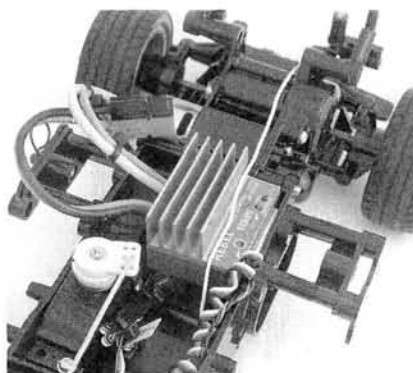
- Oh so scale.
- Quick and easy to build.
- Light, nimble handling.
- Plenty of hop-ups.

### Dislikes

- Friction shocks.
- Sloppy steering.
- Accepts only stick packs.

• **Shocks.** Both ends of each car use mono-shock suspensions built around a disappointing plastic-body, friction-damped shock with a coil-over spring. The shock shaft is simply a long screw with a smooth shank and a few threads at the bottom for the rod end. The screw head is pushed and pulled through a rubber sleeve to create the damping friction, which doesn't work half bad when it's well-lubed. What's disappointing is how much deflection you'll get with the shaft at full extension. The shock body needs a longer pathway for the shock shaft to keep it straight. On the plus side, the shock shaft doesn't have to seal against any O-rings, so for once, you can grab the shaft with your worst pliers and scratch the heck out of it without worry. It's a good feeling.

The shock is actuated from both ends by a lower A-arm—one for each side of the car. This effectively ties the two wheels together; when one wheel must



*The M02 chassis forms a narrow yet accommodating tub for the electronics. The chassis is pretty stiff, too.*



## TAMIYA MAZDA MIATA AND HONDA S800

### FACTORY OPTIONS

- Ball-bearing kit—part no. 53206.
- Universal drive shafts—53205.
- Acto-tuned motor—53251.
- 4x65mm aluminum screw set—53234.
- Aluminum motor heat sink—53241.
- Front and rear swaybars—53239.
- Quick-release battery holder—53238.

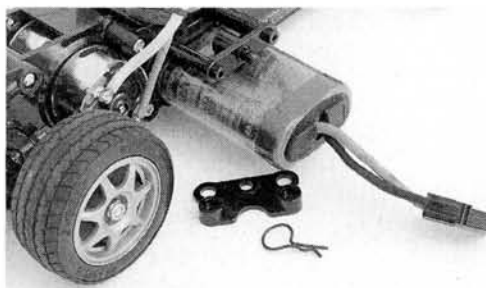
move up to absorb a bump, the other wheel is pushed down until there is sufficient force to overcome the resistance in the shock absorber and compress it. This setup allows a significant amount of body roll before the shock absorbers utilize any travel, so "helper springs" are used in the A-arms to keep the chassis vertical on the straights and prevent them from listing after turns. The springs appear to be identical, but they are specific to each A-arm, so pay attention to those instructions. In typical Tamiya fashion, the suspension linkages are not adjustable, and they pivot on smooth-shoulder screws instead of ball joints. Although the resulting suspension action is very smooth, it comes at the expense of precision; both ends of the car are fairly sloppy.

• **Chassis.** The backbone of all M-cars is a hard-plastic tub; this is split down the middle and assembled clamshell fashion. A "tunnel" for stick packs is formed by oval cutouts in the chassis sides. To support the pack, the sides have wide sills. If you set up your batteries side-by-side Joe Racer style, you'll have to do some modifying, buy an aftermarket chassis, or just get some stick packs. Sprouting out from the narrow chassis are outriggers with broad plates to grab the ends of the pack and keep it centered. To take out the pack, release a body pin to remove a retention plate. For extra convenience and lightning-quick pit stops, Tamiya offers a nice, quick-release battery holder as an option (part no. 53238)—

*The S800 also uses Tamiya's M02 chassis. Its wheelbase is a little shorter than that of the Miata, so the Honda is a bit less stable at speed. Performance on tight, twisty tracks should be in favor of the Honda, though.*

although you'll still have to put the body back on, natch.

• **Bodies.** Speaking of bodies, both the Miata and the Honda feature typically terrific bodies. To create undercuts such as the



**Battery-mounting system: pull a body clip, and the pack is in your hand. Simple, yet secure.**

Miata's undertuned "mouth" and integral bumpers, Tamiya uses multipiece molds. Conventional vacuum-forming just can't do it. The Miata's body is relatively featureless—being the '90s jellybean that it is—but the Honda gets a snazzy tree of chrome goodies, like headlight bezels and a wide grill. These really bring the car to life. The

Honda also features a unique windscreen that resembles a modern bug deflector, except that it's mounted just in front of the windshield wipers. Although I'm sure it's scale, I left it off because it would likely be destroyed in the heat of parking-lot skirmishes. I also omitted the Miata's rear-view mirrors. They look great, but they tend to get torn off, and this leaves an ugly hole in the body. People won't notice that your car doesn't have rear-view mirrors, but they'll for sure notice a hole in its door.

### TEST GEAR

First, let's talk about what I *didn't* use. I did not install the supplied plastic bushings or the 3-step speed control with reverse. My advice to you beginners out there is this: when you buy your radio, skip the mechanical and go straight for the ESC. There are lots of transmitter-servo-ESC packages out there at reasonable prices, and they're a lot more fun and a lot less finicky than the mechanical units. It's less imperative that you upgrade the kit's bushings, but you *will* want to keep them clean and well-lubed; unfortunately, once the car

the Competition	Tamiya Volkswagen Beetle	Tamiya 1/10 Mini Cooper	Tamiya S800	Tamiya Mazda Miata
Wheelbase	9.4 in.	8.25 in.	8.3 in	8.9 in.
Width (F/R)	5.3/5.3 in.	6.25/6.25 in.	6.6/6.6 in.	6.25/6.25 in.
Weight	3 lb.	2 lb., 13 oz.	2 lb., 9 oz.	2 lb., 8 oz.
Diff type	Bevel gear	Bevel gear	Bevel gear	Bevel gear
List price	\$233.99	\$218	\$234	\$234
Available at*	\$131.99	\$124.99	\$159.99	\$159.99
Reviewed in	1/97	9/95	2/97	2/97

\*Prices vary with location.

### THINGS YOU'LL NEED

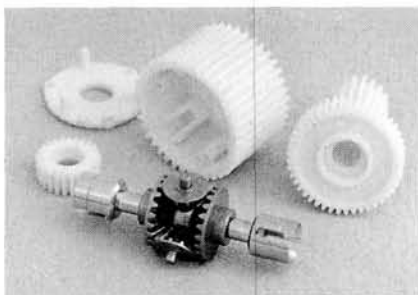
- 2-channel radio system.
- Two servos, one for steering and another for the mechanical speed control.
- 6-cell battery pack.
- Battery charger.
- Paint for the polycarbonate body.



leaves the workbench, it can't be both clean and well-lubed. When the bushings wear out, go for ball bearings. Your car will run cleaner, longer and cooler, and you'll have more fun. Trust me.

I *did* choose to install the kit motors—Mabuchi\* 540 sealed-endbell units. These are pretty wheezy when they're installed in Tamiya's heavier, more complex 4WD cars, but I felt that the lightweight M-cars, with their simple 3-gear trannies, would be a better match for the good ole Mabooch.

True scale cars like the Miata and S800 are more fun with reverse, so I reached for my Tekin\* Rebel reversing ESC. The Rebel features One-Touch Set-Up™, making fussy pot adjustments and useless plastic screwdrivers a thing of the past. Keep in mind, though, that "one touch" is actually one loooong touch. Follow Tekin's instructions, and hold the button down until the LED blinks; it takes only 10 seconds, but it feels like forever. After you've set it up (elapsed



**Gearbox internals: no balls in here, but those diff gears sure look cool. Check out the Schwarzenegger diff case.**

time: 10.5 seconds), the Rebel will have you driving like Jim Rockford. Unfortunately, I have only one Rebel, so the Honda S800 got my trusty Tekin 410S2—no reverse, but plenty of smoooooth, high-frequency fun and a handy current limiter. You can easily adjust throttle-punch from "creepy-crawly" all the way up to warp speed, if need be.

Radio-wise, I found myself faced with a

choice: should I tear down some cars on the active-duty list, or should I buy some new gear? I'm neither practical nor thrifty, so, of course, I bought two new radios. Because I wanted receivers and servos, not transmitters, I grabbed a pair of Futaba\* Attack SR stick radios. These included two S3003 servos that provide 42 oz.-in. of torque—more than enough to steer the little M-cars. A 2-channel R122JE receiver is also included; it features an easy-to-open, one-piece case. This makes it easy to clean out dust and dirt and to replace the antenna, if it gets damaged. Although I wanted only the in-car parts, the Attack transmitters were so nice that I decided to try them. Futaba packs in some nice features: LED battery-level indicators, a low-battery alarm and chunky, easy-to-use servo-reversing switches (Hey, Futaba! Put these on the Magnums!). With their neck-strap loop and included frequency flag, they'll attract only the hottest babes. Despite all that good stuff, I found driving with sticks totally unintuitive and downright hard. The only thing I can imagine to be more difficult is driving with a trackball radio. If you like sticks, the Attack is a great choice; I'll stick with my Magnum Juniors.

#### PERFORMANCE

With an armload of stick packs ranging from ancient 1300 SCs to 1700 SCRCs, I set out for my favorite parking lot. The Miata hit the pavement first. The first pull of the trigger confirmed my motor theory; the Mabuchi ticker did the job nicely. It's no tire smoker, but top speeds were good, and, ultimately, the performance was much closer to scale for a Miata than the usual "wheels afire" R/C setup. It also ran *forever*. I got a solid 12 minutes out of my worst pack.

(Continued on page 180)

## Classic Honda

Everybody knows what a Miata is, but the small crowd of onlookers at my test were puzzled by the S800. "What is that, a Mustang?" "Cool, a Sunbeam Tiger!" and "Ay, lookit, a MG like Tony's!" were some of the comments from the rabble, along with "Look where you're driving!" and "Ow, you really hurt my ankle."

Seriously, though, only the most hardcore sports-car fans would recognize the little Honda. Even I didn't know what a Honda S800 was (besides cool), so I put a call in to Tamiya America to see if I could get the 411 on the erstwhile S800. Glen Toma was kind enough to send me excerpts from the original '65 S800 sales literature. This gave an interesting technical perspective on the S800, as well as a glimpse of mid-'60s sports-car marketing.

Here's the skinny: the S800 got its go-power from a 4-cylinder, dual overhead cam engine displacing 791cc and generating a whopping 70hp at 8,000rpm, 50rpm short of redline. Rowing through the 4-speed synchromesh gearbox delivered you to the claimed maximum speed of 100mph, which must have been a hair-raising experience when you barreled along on four, skinny '60s-tech radial-ply tires.

Most unique was the Honda's "pump-forced lubrication system" which allowed the permissive 8,500rpm redline. As noted in the copy, "... two separate filters enables the engine to move at such high speeds without under wear." Maybe that's a typo and they meant *undue* wear, but I suspect those Japanese sports-car guys simply like to feel free 'n' easy when they drive.

An independent suspension with torsion bar and hydraulic damper kept the front end of the S800 on the ground, while a rear live axle was kept in check by coil springs and another hydraulic damper. Disc brakes up front and drum binders in the rear provided the "whoa" for the 1,556-pound micro machine. At a total length of 11 feet on a wheelbase of just 79 inches, micro definitely is the word.

The sales literature is all talk of bearings, bars, springs and alloys, with only a sentence given to the styling ("modern") and the comfortable bucket seats ("body hugging"). The cover shot depicts an S800 on dirt in full opposite lock, with great clouds of dust chugging out from the fender wells. Clearly, Honda was selling performance. The options list bears this out. There are no performance options; they're already in the car. But if you want a passenger sun visor, armrest, or safety belts (!), those are extra. Sure, modern cars like the Miata include all that and a lot more, but you have to wear *underwear*. Who needs that?



**Decals/detail pieces: the Miata's just a big jellybean, but the Honda gets all this cool detail stuff.**



**thrash**  
TEST  
1/10 scale electric



**Four-wheelin'**  
*on a budget*





# SCHUMACHER Cat 2000 E.C.S.

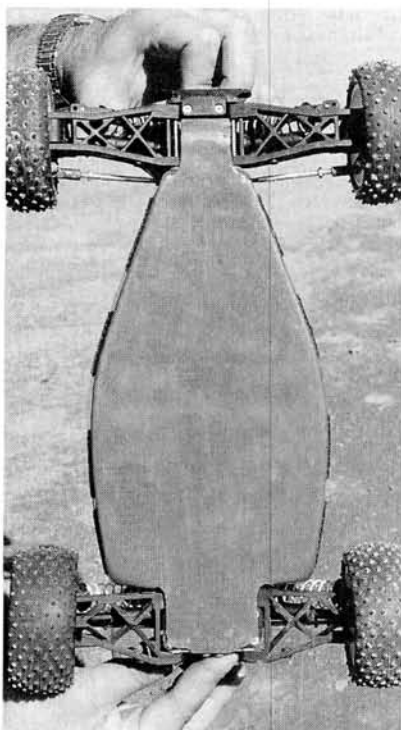
by Jim Knepley

**S**CHUMACHER\* HAS recently released a sport version of their full-blown 4WD racer, the Cat 2000 E.C. (Euro Champ). The new Cat 2000 E.C.S. (Euro Champ Sport) is feature-filled and is a bit of a departure from a typical sport-level car. Say the word "sport" to most racers, and they will raise an eyebrow. This Schumacher kit is pleasing because most of the components are identical to those in the full-blown race-ready Cat 2000 E.C. The changes do make a difference, so if your interest is in the fun of 4WD racing, you should take a closer look.

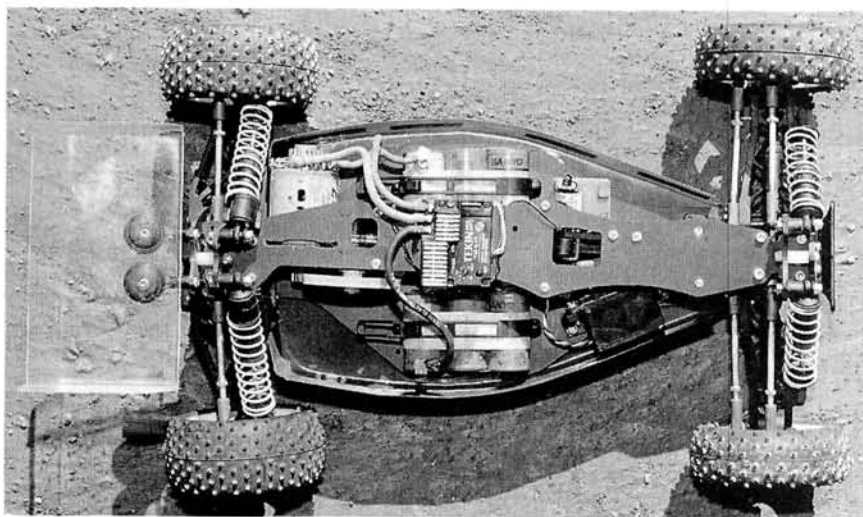
## KIT FEATURES

The chassis, shock towers, drive train, arms, carriers, differentials and axles are all the same as on the full-blown E.C. All the E.C. hop-ups are compatible with the E.C.S.

The E.C.S. features a dual-belt design with twin fiberglass chassis decks that create a rigid and light platform. The chassis uses saddle packs only. Schumacher's telescopic drive shafts efficiently transfer power from the front and rear differentials to the wheels. A one-way pulley on the layshaft ensures that the front end does not become too aggressive.



An undertray is provided to help prevent debris from entering the chassis.



The Cat 2000 Euro Champ Sport (E.C.S.) is a sport version of Schumacher's popular Cat 2000 Euro Champ. The chassis, shock towers, drive train, suspension arms and carriers, differentials and axles are all the same. What's missing? Hard-anodized aluminum shocks, a full set of ball-bearings, a slipper clutch and the motor heat sink.

## Building & Setup Tips

- When you assemble the kit, have a file or Dremel\* handy to smooth the fiberglass-chassis edges. You'll also need a pair of pliers to put on the ball ends, a Phillips head screwdriver, a 5.5mm nut driver, a 7mm nut driver and a 2mm Allen wrench.
- The kit comes stock with bushings that support the axles and differentials. In the long run, bushings can damage other parts when they wear. Be sure to add a bearing kit right away. At least add bearings to support the wheels and outriggers. Bearings will make the car faster and smoother and give it more punch off the line. You want bearings; trust me.
- The plastic shock bodies are a minimal change from the E.C. Because alloy shocks are less likely to become deformed and leak, they are the choice of racers, but the plastic shocks work very well. The E.C.S. uses shorter shocks on the front than the full-blown version (according to Schumacher, medium shock bodies are not made in plastic). The shock cartridges have the same volume-compensating design that you would see in a fully tricked-out version. Action of the assembled shocks is very smooth and consistent, and they have yet to leak. The shocks are frustrating for one reason: an inability to easily accommodate Schumacher "pro" shock springs because of the shape of the shock bodies. Better springs than the stock units are helpful, and Losi\* springs do the trick nicely.

For a fast, outdoor track, here's the setup I used:

### FRONT SUSPENSION

- Zero-degree caster, zero-degree toe-in, -1 degree front camber
- Front shock bracket: hole 2, hole B
- Shocks filled with 30WT oil, 3 holes, with Losi orange springs
- Wishbone hole 1

### REAR SUSPENSION

- Rear top link: hole A
- Rear shock bracket: hole 2
- 3 degrees toe-in (the stock setting), -1 degree rear camber
- Shocks filled with 25WT oil, 3 holes, with Losi yellow springs
- Wishbone hole 1
- Medium wheelbase

Gearing: 18/92 (with a stock motor)

• I borrowed a modification from the 1995 European Championship-winning setup that Craig Drescher used to help tack down the back end of his full-blown E.C. I was able to move the rear toe-in to the inside of the rear wishbones with the help of new hub carriers (part no. U1843T) and new pivot blocks and braces (U1841R). These modifications improve handling and are fully compatible with the E.C.S. I also converted the telescopic drive shafts into more conventional universal joints (U1915 and U1916). The latter modification is not necessary in most situations.



## SCHUMACHER CAT 2000 E.C.S.

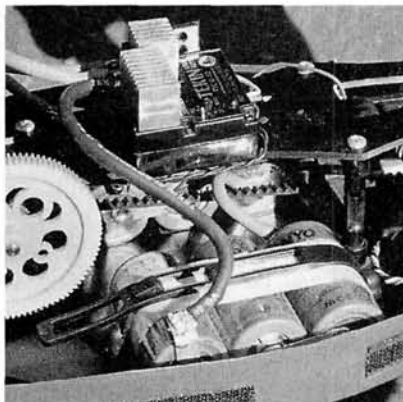
To cut over \$100 from the street price of the Cat 2000 E.C., Schumacher elected to replace two major components and remove two. The E.C.S. uses bushings instead of bearings, and the hard-anodized shocks have been replaced with plastic shock bodies and different springs. Also gone are the motor heat sink and slipper-clutch assembly.

If you intend to race this vehicle, in my opinion, the bushings should be replaced

with bearings as soon as possible, unless, of course, cost is a factor. Bushings are bad news for anyone but the most casual driver. To be competitive, racers require bearings.

The plastic shocks are surprisingly good, although I still prefer alloy shock bodies. Either material works properly, so alloy shocks are more a luxury than a necessity.

Because there is no heat sink, it is



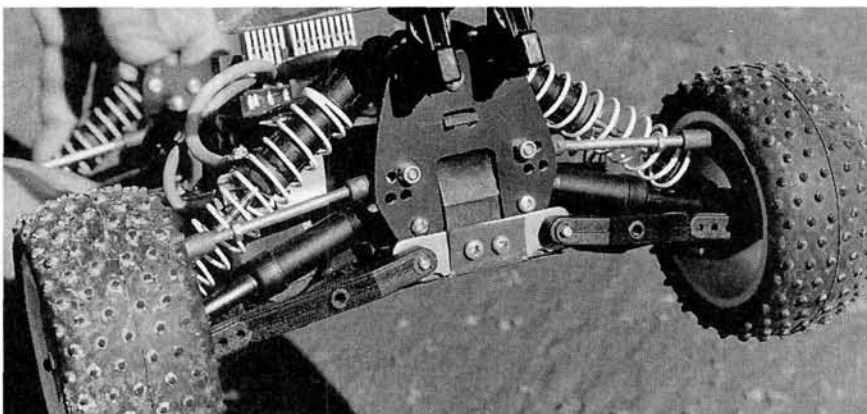
The ESC is mounted close to the cells (which are mounted in saddle pack configuration) on top of the fiberglass upper chassis brace. A small slot in the window on the body helps provide cooling air to the ESC.

### Likes

- The Cat 2000 E.C.S. is almost identical to the European Champion Cat 2000 E.C.
- Awesome steering and jumping.
- The car body and undertray do a great job of keeping dirt out of the drive train.
- The array of upgrade parts is astonishing.

### Dislikes

- Schumacher makes an excellent spring set. Why not make it easily compatible with the plastic shocks?
- The servo is not very well-protected and can break in a hard collision with another car.



Out back, you'll also find plastic shocks, aluminum turnbuckles and long suspension arms.

## Specifications

**SCALE** ..... 1/10  
**LIST PRICE** ..... \$369.50

### DIMENSIONS

Length overall ..... 16.5 in.  
Wheelbase ..... 11 in.  
Width (F/R) ..... 9.5 in.

**WEIGHT** (gross, RTR) ..... 3 lb., 4 oz.

### CHASSIS

Type ..... Dual deck  
Material ..... Fiberglass

### DRIVE TRAIN

Type ..... Belt-driven 4WD  
Transmission ..... Universal-joint drive shafts  
Differential(s) ..... Ball (F/R)  
Slipper clutch ..... None  
Bearings/bushings ..... Bushings

### SUSPENSION (F/R)

Type ..... Independent wishbone  
Damping ..... Oil-filled, coil-over shocks

### WHEELS (F/R)

Type ..... 3-spoke plastic  
Dimensions (DxW) ..... 3.38x1.25/3.38x1.5 in.

### TIRES (F/R)

..... Schumacher green compound 2.2 minispike

### ELECTRICS

Motor, battery, ESC ..... Not included

important not to let the motor get too hot; if you do, damage can result. Stock motors, properly geared, should have little trouble.

For Schumacher, not including a slipper clutch is a good news/bad news modification. The bad news is that the drive train suffers from more wear and tear. The good news is that with the additional weight of the slipper unit removed from the top shaft, stock motors have more punch off the line. If you plan to race stock, you will not subject the car to undue wear, and you'll be pleased with the results. Modified drivers should use a slipper clutch. A number of Schumacher

## THINGS YOU'LL NEED

- 2-channel radio system.
- Relatively high-speed/high-torque steering servo.
- Lexan paint for body.
- Battery charger.
- Battery pack.
- ESC.
- Motor.

### the Competition

	YOKOMO YZ-10 WORLDS	SCHUMACHER CAT 2000 E.C.	SCHUMACHER CAT 2000 E.C.S.	TENTH TECHNOLOGY PREDATOR INTL. TEAM CAR
Wheelbase	9.255 in.	11 in.	11 in.	11.19 in.
Width	10.75 in.	9.5 in.	9.5 in.	9.75 in.
Weight	3 lb., 10.5 oz.	3 lb., 6 oz.	3 lb., 4 oz.	3 lb., 12 oz.
Diff type	Ball	Ball	Ball	Ball
Chassis	Graphite	Fiberglass	Fiberglass	Nylon composite
Price	\$650	\$529.50	\$369.50	\$670
Available at*	\$450	\$329.95	\$221.70	\$460
Issue reviewed	1/96	12/95	2/97	9/96

\*Prices vary with location.





**Plastic shocks replace the hard-anodized aluminum units. Don't believe the myth that you need aluminum shocks right off the bat. These plastic bingers work very well.**

team drivers use slipperless stock motor setups on their Cougar 2000 buggies for smooth tracks, with great results. If you race stock, give it a try before getting a clutch.

#### PERFORMANCE

The test dirt was a loose, dry surface on which tires with larger knobs worked best.

#### FACTORY OPTIONS



- Graphite lower chassis deck—part no. U1794.
- Graphite upper chassis deck—U1795.
- Graphite front shock tower and brace—U1805.
- Graphite rear shock tower and bulkhead—U1806.
- Alloy rear pivot braces—U1807.
- Roller one-way conversion—U1528.
- Alloy rear transmission lower housing and motor mount—U1563.
- Alloy front lower transmission housing—U1745.
- Wide front bumper—U1566.
- Viscous drive unit—U1787.
- Viscous drive layshaft—U1788.
- Zero-degree toe-in hub carriers—U1843.
- 3-degree inboard toe-in pivot blocks and braces—U1841.
- Front universal joints "blades"—U1915.
- Rear universal joints "blades"—U1916.
- Schumacher sells Lunsford titanium tie rods and hinge pins for all of their cars—U1572 through U1580.

This allowed me to keep the original green-compound minipins. The lack of a clutch forced me to roll out of turns a little more than usual to keep the wheels stuck. The car turned and jumped just as well as the full-blown kit, even with a stock servo, and accelerated quickly. Properly set up, the Cat 2000 E.C.S. (and the E.C., for that matter) handles jumps very well.

For fun, I switched from the stock motor to a 12-turn double modified. Although it was not as bad as I thought it would be, the reduced traction did not allow me to drive aggressively. Suffice it to say that modified racers will use some kind of traction control or try different tires to be competitive on some surfaces.

#### FINAL THOUGHTS

It is a good sign that Schumacher has brought a top-level performer like the Cat 2000 E.C. down to a cost that is within reach of us mere mortals. Although some 4WD racers will probably opt for the full-blown kit, the E.C.S. provides a less expensive alternative that also exhibits great performance traits.

My recent experience with 4WD cars has shown that they are just plain fun to drive. The Cat 2000 E.C.S. is no exception. This car handles, jumps, turns and accelerates just like its world-class cousin. For stock racing, add bearings and give the other elite 4WD kits a run for first. If full-blown modified racing is more your style, pick up a heat sink, bearings and a slipper clutch, or Schumacher's viscous drive. Side by side, the E.C. and the E.C.S. are nearly indistinguishable, but your pocketbook will be able to tell the difference right away.

*\*Addresses are listed alphabetically in the Index of Manufacturers on page 201.*

## DAHM'S RACING BODIES



**CYBER BUGGSY™** for RC10T & RC10T2  
D236 - .030 Light Lexan, D237 - .040 Strong Lexan



**NEW!!! D236 & D237 CYBER BUGGSY™** is the Ultimate Racing Bug Body for the RC10T & RC10T2. Cyber Buggy fits these trucks very Low & Tight! Features a Cool Roof Scoop, Rear bolt-on Spoiler, Chopped Top, Sun Roof, Split Rear Windows, & Headlight & Taillight Decals.



**NEW!!! D234 & D235 SLAMMER GT2™** 1997 ProTruck Styling! Fits RC10GT, & New RC10GT with Wide Rear Tower. Superior Aerodynamics! Excellent Engine Access & Cooling! Bolt-on Rear Spoiler, Headlight, Grill & Taillight Decals!



**NEW! D224 SPITFIRE 12™** Fits RC12L & Tamiya Minis. High Performance ROAR Approved Racing Body. Spoiler, Headlight & Taillight Decals.



**NEW! D231 CYBER SEDAN™** Shown on the Associated RC10DS. Also fits Wide HPI, Tamiya, Kyosho 4WD Sedans, RC10LSS & EV10SS. Honda Accord Styling. Can also be finished like the Toyota Camry. Includes Wide Sedan Wing.

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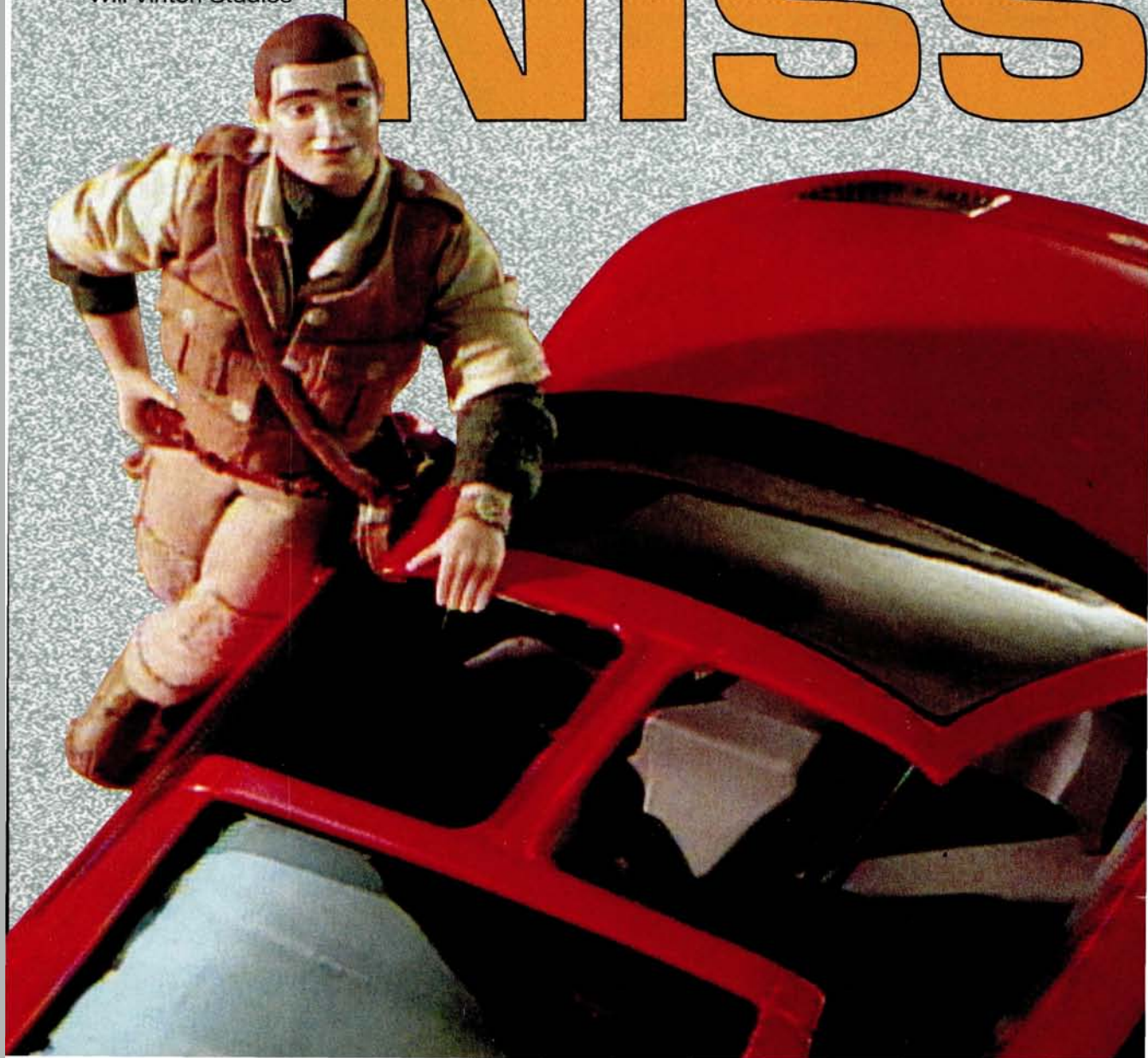
## A BEHIND THE SCENES LOOK AT THE MAKING OF THE 300ZX COMMERCIAL



ISN'T IT ODD to see an R/C car on television?—besides the toy cars advertised by Tyco and Radio Shack. Yet one day, I saw a stop-motion-animation style commercial that really blew me away. Not only was the commercial fun to watch, but it also featured an R/C car that just could not have been an animation. The commercial opened with an action figure—like a combination of Indiana Jones, Crocodile Dundee and GI Joe—dangling as if dead from the mouth of a toy dinosaur. Suddenly, our hero came to life, escaped from the dino and rappelled off the desk to the floor, where he used an R/C radio to activate a toy Nissan 300ZX. Then he jumped into the car, adjusted the rearview mirror and sped off to another room, where he copped a date with a Barbie-like doll. The action is set to the 1978 Van Halen remake of The Kinks' "You Really Got Me." If you haven't seen this commercial, you've missed out on something great; it's really wild!

by Dominic Tuso  
Images courtesy of  
Will Vinton Studios

# NISS







# AN'S

## Venture into R/C

### BEHIND THE WHEEL

Who was the driver of that mighty R/C car? Could it have been world champ Brian Kinwald or Masami Hirose? Well, actually, no. It was just a guy you might see at the track or at the hobby shop—a guy who has a deep passion for the hobby—Ric Keen.

Getting the word out about R/C cars and trucks is nothing new for Ric, who has been involved with R/C for 12 years. He started as a hobby shop employee in Los Angeles, where he sold kits and parts to people such as the great Jammin' Jay Halsey.

Eventually, he started his own company, R/C Mini Motorsports.

Soon, Ric began to use his R/C know-how in another format—entertainment. Ric's first gig was with the Portland Memorial Coliseum's halftime entertainment for its monster truck shows. With his 1/10-scale Tamiya® Clod Buster, he performed stunts in front of tens of thousands of spectators. For subsequent shows, he assembled more and more of his R/C buddies, and they had a great time entertaining the audience by running over the jumps and climbing over the cars that the full-size

monster trucks had just finished jumping and crushing. He then branched out to do R/C promotions at schools, electronics stores and car shows.

When the producers at Will Vinton Studios of Portland, OR, needed an R/C driver, they went to the local hobby shops, where everyone told them about the same guy, the king of the parking-lot racers—Ric Keen. Ric was the first to introduce the parking-lot race craze to the Portland/Vancouver area, where for the past two years of his program, he has outdriven most of the local racers.

After a quick phone interview with Ric, the producers requested that they meet to work out the details of a secret project. Ric had no idea what was in store.

The next day, a studio representative went to the hobby shop where Ric was an assistant manager. After he'd given a short explanation of the studio's project for Nissan, Ric steered him toward the ever-versatile Tamiya TA02 chassis and a radio system, Ni-Cd battery and charger. The representative OK'd the purchases, asked that Ric have the car fully built as soon as possible and told him not to worry; Will Vinton Studios would make the wheel covers and the resin-cast body of the sporty Nissan 300ZX.



Enjoy the ride.



## NISSAN COMMERCIAL

Then the modifications began. First, Ric replaced the stock Tamiya tires with Pro-Line's\* realistic-looking treaded Z-28 Sedan Hawg tires. Because the wheelbase was not correct for the scale 300ZX, Ric had to reverse the front and rear A-arms to obtain the exact measurement he needed.

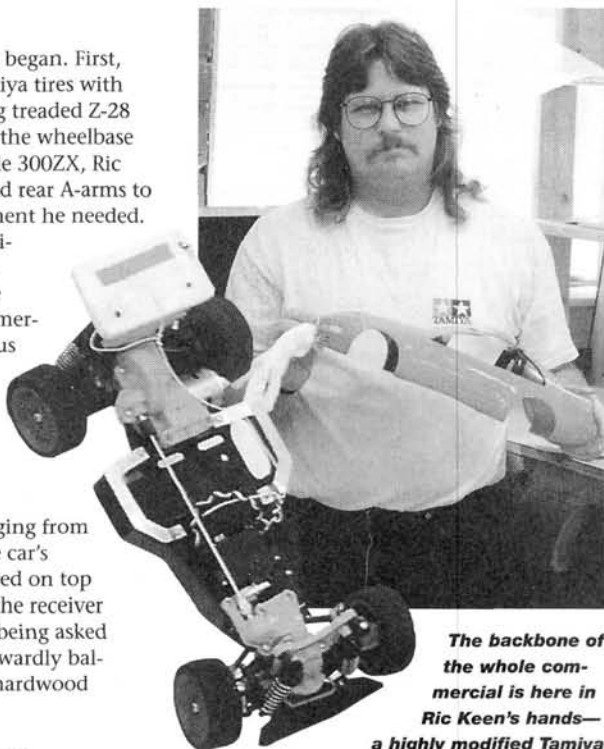
The producers had specified a car that was a T-top with a real interior (in one overhead shot in the commercial, you can see the famous TA02 prop shaft running through it), so Ric had to find a new location for the 6-cell Ni-Cd battery; usually, it's mid-mounted. Ric found the only place to hide it—hanging from the rear shock tower in the car's trunk. The ESC was mounted on top of the steering servo with the receiver just beside them. Imagine being asked to precision-drive this awkwardly balanced car on a high-gloss hardwood floor for a commercial!

### LIGHTS, CAMERA ...

The set for the commercial was inside a huge aircraft hangar that Will Vinton Studios had converted into a film studio. Glamorous work it wasn't. Giant lights simulated daylight, but they also threw off unbearable heat onto Ric, who had to stand off-camera to drive the car for repeated takes.

The car's resin body was fragile, and the commercial's plot called for it to traverse narrow courses. In a few of the shots, the crowded set even required Ric to drive the car blind. For the scenes to look just right on camera, everything had to happen within fractions of inches. For one scene, Ric had to squeeze the car through an open door, and he literally ran into a problem. The script specified the angle at which the door would be ajar, but that didn't allow enough of an opening for the car to fit through—even when Ric tried to put it through by hand. He repeatedly told the producers that the door had to be opened wider. They didn't listen. After many shots, the car had a few scratches and a headlight had fallen off, so while the producers were engrossed by some footage on a monitor, Ric covertly opened the door a bit more. When the producers turned around to watch the next take, they were very happy to see that Ric had driven the shot perfectly.

Ric's advice is to never work with a 4-foot-long camera lens, an R/C car and a cat at the same time. It makes for a lot of flying fur. The cat in the commercial didn't



*The backbone of the whole commercial is here in Ric Keen's hands—a highly modified Tamiya*

**TA02. To fit the custom-made 300ZX body, Ric had to flip the arms around as well as reconfigure the battery-mounting location to the back of the car. Ric informed us that driving the highly modified car with the higher center of gravity on a slick floor surface wasn't the easiest thing in the world to do. The finished product sure looked smooth, though.**

have a problem with the car itself, but when the camera dolly with that 4-foot-long lens followed the car around the corner, the cat always freaked out.

The project was lot of fun, but it was also a lot of work. There is a rumor of a sequel, and, if this is true, Ric will likely be the R/C driver.

### PROMOTE THE HOBBY

What does the future hold for the promotion of our R/C hobby? That will depend upon all of us who are already involved. We'll promote the hobby if we have a welcoming attitude while we "play" and race and if we are willing to share information. One thing is for sure: Ric will promote R/C as much as he is able and in front of as many people as he can. His ultimate goal would be to drive one of his R/C monster trucks over Dave Letterman on "The Late Show."

\*Addresses are listed alphabetically in the Index of Manufacturers on page 201.



## Clod-A-Leaver II Sweeps 1996 NR/CTPA World Championship

**C**lod-A-Leaver II-equipped Clodbusters placed 1-2-3-4-5 at the '96 World's. Defending Champion Joe Kirkwood won the championship with Fred Privett, Jr., Fred Privett, Sr., and Brent Riley following close behind. In all, 8 of the top 10 Clodbusters featured **Clod-A-Leaver II** chassis/steering/suspension kits. Earlier in the season at the NR/CTPA US Nationals **Clod-A-Leaver IIs** placed 1-2-3. No other factory-built kits were even close at either event.

Joe's championship Clod featured the new for '97, **Clod-A-Leaver II R** chassis kit (not shown), Trinity Dirtinator motors, Trinity GM-VIS batteries, Tekin 420-G2 speed control, Tekin B112C charger, HiTec 615 Hi-Torque servo, and HiTec mini receiver.

The **Clod-A-Leaver IIR** is a racing chassis/steering/suspension that features a new, super-lite front-mounted servo bracket, slightly redesigned geometry, and also, as a limited extra cost option—titanium ladder bars.

Features that both the original **Clod-A-Leaver II** and the **Clod-A-Leaver II R** share are: super-lite alum chassis, long wheel base ladder bars, extra heavy duty 6-32 ball ends, front and rear swaybars, full cantilever suspension, stainless-steel hardware, and receiver/speed-control tray.

The **Clod-A-Leaver II** kit also includes the proven bumper/brushguard/servo mount that is available separately to fit on any stock or modified Clod. If you don't own a Clod and would like to build one from scratch, you will need 2 complete Clodbuster axle assemblies, wheel and tires, 4 shocks, all electronics, body and body mounts. All of these parts are available from **Bennett Equipment** and a custom kit of stock or aftermarket parts can be arranged to suit your tastes and budget. Four-time national R/C monster truck Champion Joe Kirkwood will also custom build a **Clod-A-Leaver II** to your specifications. Call for quotes.

Videos of the 1996 NR/CTPA World's! An hour-long video is now being edited for release. Exact cost has not been set, but will be very reasonable and very entertaining. Write or call for details.

The **Clod-A-Leaver II** 2-wheel steer kit is \$235 (4-wheel steer kit is \$260), and the **Clod-A-Leaver II R** (racing) 2-wheel steer kit is \$240 (all are 4 w/dr).

Also available are JPS alum Clodbuster parts as well as almost everything available for Clodbusters.

### Bennett Equipment

900 East 1300 South, Romney, IN 47981  
(317) 538-2725 (eve.) MC/VISA  
SEND \$2 FOR BROCHURE.



# PRODUCT WATCH

by John Howell

## Trinity X-Star

**L**AST MONTH in "New for '97," we showed you Trinity's\* newest stock motor, the X-Star. Because of space and time restrictions, we were unable to give an in-depth report. Now that we've had one for a little while, let's check out what makes it tick.

### GOING TO X-TREMES

As you can clearly see, the X-Star is definitely a colorful piece of equipment. From its chrome-plated can to its bright purple and orange label, this is one flashy motor. But a motor can be a technicolor dream on the outside and still not have what it takes on the inside to make it a good performer on the track. That's where the X-Star shows its true colors. It shares some features with Trinity's Midnight, but the X-Star has a few internal differences that give it unique performance characteristics.

• **Armature.** The X-Star is equipped with a Tri-Rotor design armature that is similar to the one in Trinity's Green Machine 2 (the Midnight can has a Split-Rotor armature). The Tri-Rotor armature has less metal in its blank, and this allows the motor to spin higher rpm.

When you remove metal from an armature and lighten it, the motor's rpm range increases. And though rpm increases, the downside is that, more often than not, torque is reduced. In this case, though, the X-Star's rpm increases more quickly than the torque decreases. The result is that the motor produces more power (watts).

Power is what makes your buggy or

truck move. A motor that produces high rpm without producing torque won't budge a thing. The new Tri-Rotor armature and a few other internal mods allow the X-Star to produce good rpm without sacrificing power output.

Another feature of the Tri-Rotor armature design is that it allows cooler operation. The reduction in plate area (less metal) allows more room for air to flow around the windings. Keeping the copper windings cool is crucial to maintaining good power. When the windings get hot, resistance goes up. When resistance rises, power output drops. The bottom line is that you have to keep the motor cool.

• **Magnets.** A magnet has two main characteristics: its magnetic strength and its ability to withstand opposing fields without losing magnetic strength. The stronger the magnets are, the more power you can get out of the motor. The stronger the field the magnets can withstand, the more power the motor can accept without hurting them.

The primary cause of magnet degrada-

tion in a motor of this type is damage by an opposing magnetic field. Whenever a motor is running, electricity traveling through the armature's copper wire generates an opposing magnetic field (if this didn't happen, the motor wouldn't run). This opposing magnetic field causes the field loss in the can's magnets. When that happens, the



### Put to the Test Both the Trinity X-Star and the Midnight were tested head-to-head on a Competition Electronics\* TurboDyno.

#### X-STAR

Readings at a constant 6V

Rpm	Torq	Watts	EF	Amps
20,483	3.1	48	53	14.9
20,226	3.3	49	55	14.9
18,045	5.7	76	63	20.0
15,988	8.1	96	63	25.0
14,147	10.3	108	58	30.0
12,289	11.8	108	50	34.9

#### MIDNIGHT

Readings at a constant 6V

Rpm	Torq	Watts	EF	Amps
17,080	4.5	57	64	15.0
17,267	4.4	56	62	15.0
15,449	7.0	80	66	20.0
13,936	9.2	95	63	24.9
12,410	11.1	102	56	30.0
10,789	12.7	102	48	34.9

The heart of the X-Star is this Tri-Rotor armature. It has less plate area than Split-Rotor armatures and produces more overall rpm.



## PRODUCT WATCH: TRINITY X-STAR

motor is less efficient and doesn't produce as much power as it's capable of. The solution? One of the easiest is to equip your motor with better magnets, and that's what Trinity did with the X-Star.

The X-Star comes with the new 5.4 version magnets that are also found in Trinity's newest modified motor, the Dirtinator 2. In the past, magnets were more effective at one task than another. They either were able to resist opposing magnetic fields better or provided more magnetic strength. The new 5.4 magnets offer the best of both worlds. Not only do they have an improved field strength, but they are also more resistant to demagnetization—key features that enhance motor performance.

These new magnets are also more heat-resistant. As the motor temperature rises, they suffer less field loss than other magnets do. In the end, this will improve motor performance and help extend battery life.

- **Can.** The X-Star's 1.3mm can is almost identical to the Midnight's, but it has a slightly re-engineered mounting surface that provides better airflow and improves its magnetic properties. It also has a chrome-plated finish instead of a black coating. Two small cooling vents on the side of the can allow air in to cool the motor.

The can is also equipped with Trinity's Internal Magnetic Flux Collector. This is a metallic ring between the motor's endbell and magnets. It improves the magnetic field's balance, and this helps make the motor more powerful.

Inside the can, you'll find the same narrow cross-section bushings as are found in the Midnight. These bushings are unique because they have been counterbored on one side to significantly reduce (by roughly one third) the bushing area that contacts the armature shaft. These bushings allow the armature to spin with less friction than a typical bushing would. The bushings break in quickly, they allow the armature to produce more rpm, and they help the motor accelerate more quickly off the line.

Topping off the can is Trinity's lightweight UniFlow endbell. The endbell has 4387 BlackTek motor springs (high-tension and high-temperature-resistant), soldered-on 4080, hard, serrated, laydown brushes and one capacitor that has been soldered on at the factory.

### PERFORMANCE

The X-Star was designed to be a replacement for the high-revving Green Machine 2 (renowned for its top-end power), but after Trinity had thoroughly tested the X-Star,

they realized that it had true potential in a variety of racing arenas and wasn't limited to high-speed-only situations. Although they found the motor to be most advantageous on larger tracks where top speed is more of a factor, i.e., large oval courses, as well as on-road and off-road tracks with long straightaways, they also found that it performed well on most off-road tracks. As you can see in the accompanying dyno chart, the X-Star has a much broader rpm range (8,214 versus the Midnight's 6,291), and it pulls much harder on the top end.

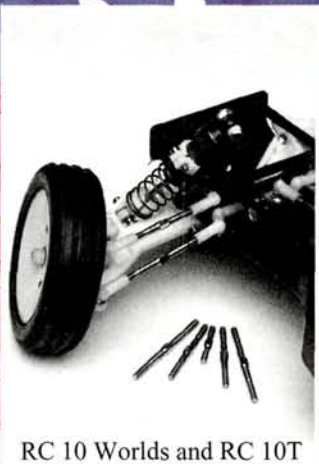
Although the motor doesn't have the same bottom-end punch as the Midnight, it's still no slouch, and it will be able to attack tight, twisty tracks as well (Trinity does recommend dropping a tooth or two on the pinion if you're going to run the new X-Star on that type of track).

The motor truly shines when track conditions allow you to open it up all the way. So if you race on tight, "technical" tracks only, you might be better off staying with the Midnight, but if you race on a track that has a combination of tight, technical sections and decent straightaways where you need a good amount of top speed, you might want to check out the X-Star.

*\*Addresses are listed alphabetically in the Index of Manufacturers on page 201.*

# LUNSFORD Racing

Let us remove the word "broken"  
from your racing program



RC 10 Worlds and RC 10T



LOSI XX and XXT

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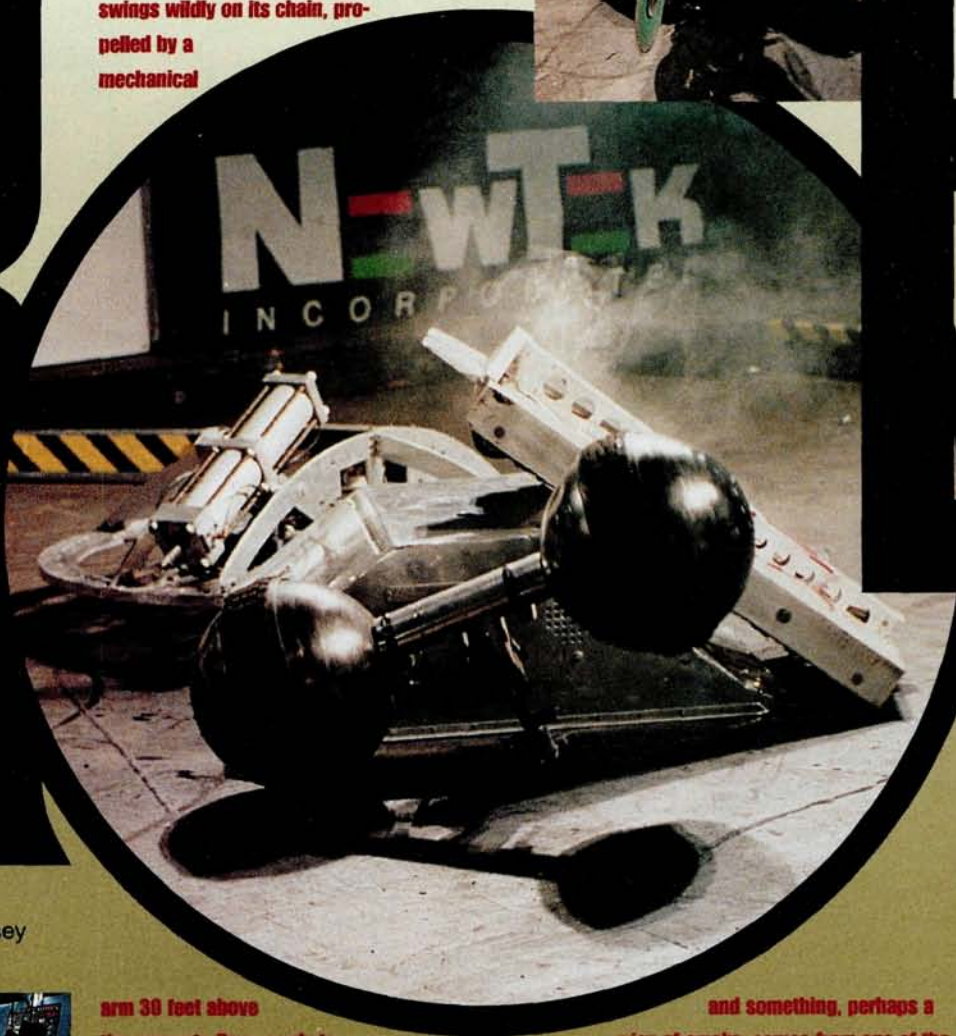
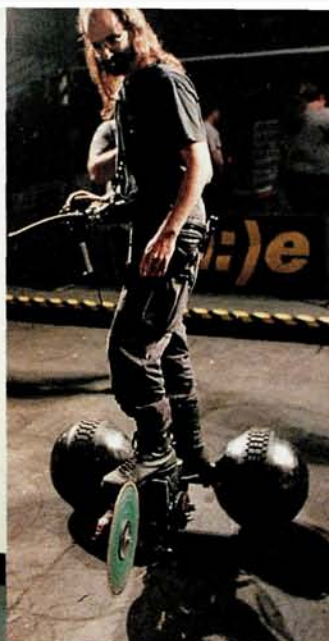






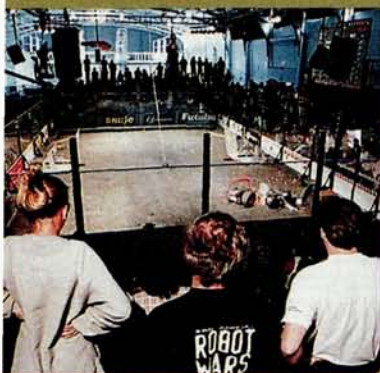
# Truly Weird Science!

**T**HE EIGHT-LEGGED ROBOT, looking more like two old beds in a lover's embrace than a fighting machine, steps carefully around the arena. A small open-work crab with business-like pincers worries its ankles, but it is not clear how it can hurt the tall chromed metal legs. While the combatants concentrate on each other, a howling ball swings wildly on its chain, propelled by a mechanical



Top: the Master is gas-powered and strong enough to carry its operator, Mark Setrakian, into the arena. Left: the Master (which won last year) gets split in half. Bottom left: the arena.

by Jef Raskin  
Photos by Sean Casey  
and Aza Raskin




arm 30 feet above the concrete floor, ready to smash into any robot that comes into its path. The concrete floor itself is littered with the debris of previous battles and scarred by the weapons of departed winners and victims alike.

The pincers swing around and, in a well-orchestrated move, grab two of the walker's legs and hold them like a demented bulldog. The big machine grinds as it tries to get away,

and something, perhaps a wisp of smoke, comes from one of the silver boxes holding its guts and brains. In a few seconds, it is clear that it is smoke, but the robot battles on regardless. The audience, enthralled, gasps as the robot bursts into flame. But it is still moving, still under control. With a shudder, it lurches left and right as the smell of burnt insulation and printed circuit boards begins to fill the building. A fire extinguisher puts the creature out of its misery.





*This page, top to bottom: La Machine flips an opponent into the mouse trap. ■ The pits, where the robots are prepared. ■ The arena: La Machine meets the South Bay Mauler. ■ A demonstration of a 1,000-pound, gas-powered robot. Not a competitor, fortunately. ■ Biohazard flips Killborg with its hydraulic arm, rendering Killborg's gas-operated metal punches useless.*



**This heat has been hotter than most.**  
**The ultimate in commitment to your R/C vehicle is not a race, but a duel to the death. Robot Wars, created by Marc Thorpe (who still runs the event) is now a globe-girdling sport—with entries from England, France, Australia and any other country where the call of mechanical battle rings clear. The riveting main event is held in San Francisco.**





## ROBOT WARS 3

The battles are as visceral as football, and the crowd cheers much as the Romans must have done while watching gladiators. Though the blows are landed on metal, plastic and wood rather than flesh, you feel them as though they were. You get to know the robots as personalities (and, when it's all over, there's the big advantage that nobody ever goes to the hospital).

### HOW TO PLAY

There are two basic classes: R/C and "autonomous." The latter category has robots that operate without human guidance. So far, none has worked well enough to compete. So all the real action is R/C. There are four weight classes: 5 to 25 pounds, 26 to 50 pounds, 51 to 100 pounds and 101 to 165 pounds.

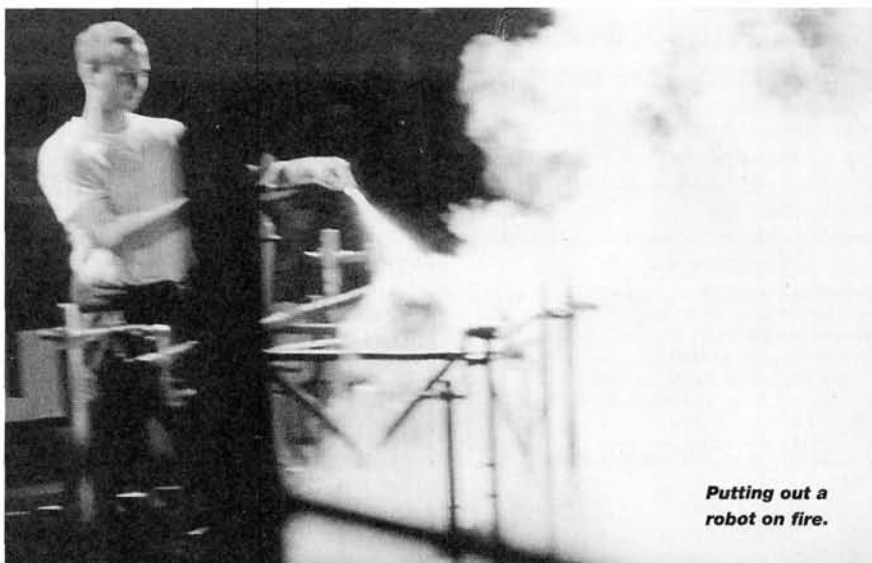
The competitions take two forms. My favorite is the face-off. Two robots within a weight class are randomly chosen and put into the arena for 5 minutes. If one robot can render the enemy immobile for 30 seconds, it is the winner. If both are still moving, the judges can declare one of them the winner or leave it to the audience; the louder cheers indicate the winner.

The M  le is sheer madness. Typically, five robots are in the arena at once, with murderous intent. It's unpredictable. In a memorable match, one of the robots herded all the others into a corner where they were so jammed in that they couldn't move.

Because they are more complex, legged robots are allowed to be one class heavier than other robots, with a maximum of 215 pounds. Clusterbots are robots that start out as one unit but break up into separate robots to form a team. They are considered defeated when half of the units have been rendered immobile. Judges are allowed to disqualify any robot that tries to survive by evading combat.

Power sources are electric (most go this way), fuel, pneumatic, or hydraulic. A number of safety restrictions rule out explosives, corrosives, flames and pyrotechnics, untethered projectiles, lasers over 3mW, compressed gas over 1,000psi and hydraulic pressure over 3,000psi. Pressure tanks and their valves must be protected from damage. Fuel is limited to 8 ounces or a 6-minute supply, whichever is less. There are other rules, but they do change; see the end of the article to find out how to get current information.

Tactical restrictions include radio jamming, electronic weaponry (no Tesla coils,



**Putting out a robot on fire.**

for one), liquid weapons, interfering with other contestants and flying robots (lighter-than-air electric-powered robots are allowed). This event is for R/C cars, not planes or choppers. Robots in the lightest weight class, by the way, are mostly based on R/C car chassis. There are cash prizes, which in 1996 ran from \$200 to \$1,000.

### WEAPONS

Weapons are limited only by the rules and your imagination. In practice they run an amazing gamut. Just a few that I remember: gas-powered, abrasive, cut-off wheels, hydraulic rams with tungsten carbide tips that could pierce 1/4-inch metal armor, nets, chainsaws, studded steel balls (maces) whirled on chains, sledge hammers, hydraulic flippers, the front end of a soil tiller, double-sided sticky foam tape and strings with tin cans on the ends.

Given all these weapons, you might be surprised to learn that most of the more successful robots are simple wedges or plows that flip their opponents or get under them so that the opponent loses traction and cannot move. Aside from the traction (wheels or tracks) and steering, they have no moving parts! An enemy, no matter how heavily armed, is rendered harmless if it can't move its weapon into position.

In the heavyweight division, La Machine—entered by NewTek Inc.—won the M  le. La Machine is a "simple" plow with a curved front and was fast, powerful and maneuverable. Well-designed, carefully built and driven by an expert helicopter pilot, it dashed across the arena

and smashed into its opponents, often flipping 100-plus-pound robots over on their backs.

In the face-off, it was beaten by Carlo Bertocchini's beautifully machined Biohazard. This is a very low, rectangular box that was equally fast and powerful. It was so low and heavy that the traps and hazards of the arena simply missed it or would bounce off. To keep things simple and mechanically sturdy, its pilot steered by simply speeding up the wheels on one side or the other. Biohazard had one offensive weapon—a hydraulic arm that could retract completely into a groove in the top surface so that other robots couldn't get a grip on it. When it faced off against La Machine, it was eventually flipped when La Machine got a good run at it, but Biohazard's hydraulic arm also served to let it turn itself back over, like a beetle, and keep on fighting (massive cheers!). When it got its arm under La Machine, Biohazard was able to keep it from moving and, scooping inside, did enough internal damage to win the match, as pieces from La Machine fell onto the floor (unlike Biohazard, La Machine had no protection on the bottom: no other opponent had ever flipped it). Both of these superb robots are very low to the ground and hard to slip under. Biohazard had hinged "skirts" to prevent its being lifted and tipped.

In the M  le, Biohazard got hit from the side while its arm was extended to deal with another opponent, jamming the arm and, without its sole weapon, it lost to La Machine. Each won a \$1,000 prize.

A few people have entered what amounted to upside-down lawn mowers with the spinning blades on top. Aside from being very hard to start and dangerous to approach, they've all lost. Gyroscopic forces often made them flip themselves over.

*(Continued on page 182)*

### Robot Sources

Sources of robotic R/C controllers and parts include Mondo-Tronics and Vantec. For a free catalogue, contact Mondo-Tronics at (800) 374-5764 or <http://www.robotstore.com>. Vantec (custom radio controllers) can be reached at (800) 882-6832. Mondo-Tronics brought an autonomous robot that attacked anything colored orange—neat!









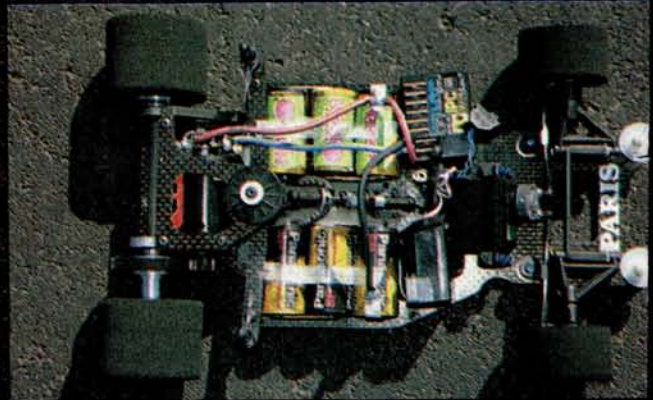
# *Rulers of the Roadcourse*



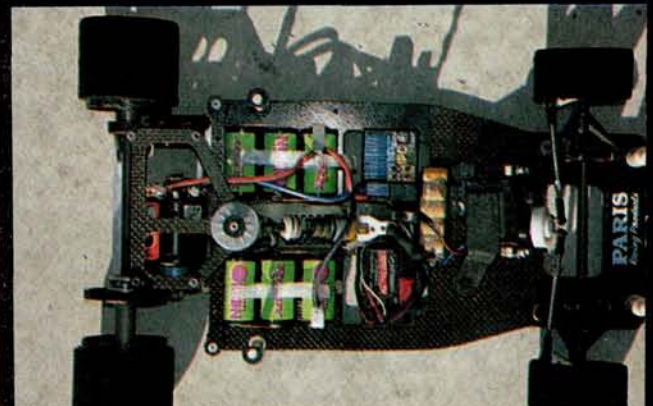
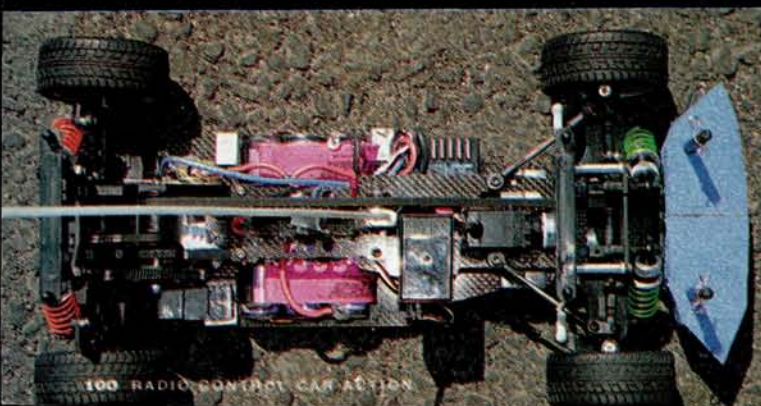
# ROAR



**Above:** David Jun's Sedan Modified top-qualifying Tamiya TA03F Pro. **Below:** Tim Bump's TQ and national championship-winning Roadrunner Express (both Stock and Modified champion).



**Above:** Mike Swauger's TQ and national championship-winning Associated RC12LC. **Below:** Mike Swauger's TQ and national championship-winning Associated RC10L.







Above: a view of the drivers' stand just before the start of the Sedan Modified A-Main.

Right: one of the racers got smart and brought his Sedan Modified entry by trailer. Hey, it beats carrying it, huh?



Tim Bump was very successful. His two new Roadrunner cars won him national championships in both Modified Sedan and Stock Sedan—not bad for a debut!

# On-Road Nats

by Dan Haas

**H**ELD AT REVELATION RACEWAY in Ontario, CA, the 1996 ROAR On-Road Nationals featured some very exciting bumper-to-bumper racing action. The weather was beautiful, with sunny skies and not-too-high temperatures. Racer turnout was low, but racing was just as intense as at any other national event. There were seven classes: F1 Stock, Sedan Stock, Sedan Modified, GTP Stock, GTP Modified,  $\frac{1}{12}$ -scale Modified and one new class, Mini Sedan.

## QUALIFYING HIGHLIGHTS

Three rounds of qualifying on Friday and three on Saturday gave drivers plenty of opportunity to make it to the infamous A-Main.

Of the five entrants in F1, Jay Kimbrough and Dominic Alessi battled for the TQ position. Kimbrough came out on top with a super-close,  $\frac{1}{100}$ -second lead over Alessi. Tim Bump dominated Sedan Stock with his new Roadrunner Express. Bump TQ'd with 14 laps at 5:05.57. David Jun proved himself to be the fastest driver in Sedan Modified with his Tamiya TA03F-Pro Sedan. He earned the TQ position with a 12-lap 4:10.70 time. Mini Sedan was the ultimate bash-fest! Unlike the other classes, in which each car started individually using the "IFMAR start" format, the mini sedans all ran on the same clock. This led to quite a few pile-ups, especially in the beginning. Ken Gerberding managed to avoid any major collisions and took the TQ position with a 14/5:17.02 time. In GTP Stock, Paul Smith drove his Associated 10L to a nearly 2-second lead over Brian Rutherford for the TQ. Mike Swauger was the fastest driver on the track with his GTP Modified, Reedy-powered Associated 10L. He earned the TQ position with an amazing 15-lap 4:07.67 time. In  $\frac{1}{12}$ -scale Modified, Barry Baker kept the tightest lines on the track and took TQ honors with a 29/8:17.83 time.

Team Associated driver Mike Swauger had a busy weekend. He TQ'd, won the  $\frac{1}{12}$ -scale Modified National Championship and repeated his performance in GTP Modified by capturing the TQ and national championship in that class. Then again, he is the IFMAR  $\frac{1}{10}$ -scale World Champion.



FEBRUARY 1997



# Winners' Chart

F1 Stock

Fin.	Qual.	Name	Chassis	Motor	Battery	ESC	Radio	Body	Tires (F/R)	Traction Additive	Pinion/Spur
1	2	Dominic Alessi	Tamiya	Race Prep	Orion	Novak	Futaba	Protoform	Jaco	Paragon	24/96
2	1	Jay Kimbrough	Tamiya	Handout	Ballistic	Novak	Futaba	Tamiya	Jaco	Paragon	26/100
3	3	Sam Daugherty	HPI	Handout	Litespeed	Tekin	KO	Protoform	Jaco	Paragon	27/116
4	5	Lou Gabel	Tamiya	Race Prep	Reedy	Novak	Airtronics	Tamiya	HPI/Associated	Coppertone	18/75
5	4	Aldo Ruiz	Tamiya/HPI	Handout	Orion	Tekin	Futaba	Tamiya	CKW	Racer's Choice	NA

Sedan Stock

Fin.	Qual.	Name	Chassis	Motor	Battery	ESC	Radio	Body	Tires (F/R)	Traction Additive	Pinion/Spur
1	1	Tim Bump	Roadrunner	Peak	Orion	LRP	Airtronics	Elite	HPI	None	NA
2	3	Tim Long	Roadrunner	Handout	Orion	LRP	Sanwa	Elite	Roadrunner	None	30/78
3	2	Ken Gerberding	Roadrunner	Handout	Ballistic	Tekin	Airtronics	Elite	Yokomo	None	34/93
4	6	Jimmy Wright	Roadrunner	Handout	Ballistic	Tekin	Airtronics	Factory Works	Yokomo	Gamma	29/90
5	7	Steve Hguyen	Roadrunner	Handout	Orion	Tekin	Airtronics	Elite	Yokomo	None	34/92
6	5	Jimmy Kao	Kyosho	Race Prep	Orion	Novak	Futaba	Elite	Yokomo	Trinity	30/81
7	9	Frank Killam	Predator	Handout	Maxtec	Novak	Airtronics	HPI	Tamiya	Associated	34/80
8	4	Edsel Labao	Roadrunner	Handout	Orion	Tekin	Airtronics	Elite	Yokomo	None	NA
9	8	Jon Shigetomi	Kyosho	Handout	Orion	LRP	Airtronics	Elite	Yokomo	None	29/81
10	10	W. Poedjorahardjo	Yokomo	Handout	Trinity	LRP	Airtronics	Yokomo	Yokomo	None	27/75

GTP Stock

Fin.	Qual.	Name	Chassis	Motor	Battery	ESC	Radio	Body	Tires (F/R)	Traction Additive	Pinion/Spur
1	1	Paul Smith	Associated	Handout	Orion	LRP	Airtronics	Andy's	Jaco	Paragon	NA
2	2	Brian Rutherford	HPI	Handout	Double Strike	Novak	Futaba	Andy's	TRC/CKW	Paragon	27/120
3	6	Greg Larson	Associated	Handout	Orion	Tekin	Airtronics	Andy's	Jaco	Paragon/Coppertone	24/112
4	3	David Souza	HPI	Handout	Stealth	Novak	Airtronics	Protoform	Jaco	Paragon	26/120
5	5	Jim Welsh	Corally	Handout	Orion	Novak	Airtronics	Parma	Jaco	Paragon	28/120
6	9	Robbie Collins	Yokomo	Handout	Orion	Novak	Airtronics	Andy's	Jaco	Microburst	25/116
7	7	E. Cademartori	Associated	Handout	Quest	Tekin	Airtronics	Protoform	Jaco	Paragon	25/115
8	9	Scott Broussard	Associated	Handout	Orion	LRP	Airtronics	Andy's	Jaco	Paragon	17/81
9	4	Paul Truex	Associated	Gamma	Ballistic	Tekin	Airtronics	Andy's	Jaco	Paragon	21/116

Sedan Modified

Fin.	Qual.	Name	Chassis	Motor	Battery	ESC	Radio	Body	Tires (F/R)	Traction Additive	Pinion/Spur
1	2	Tim Bump	Roadrunner	Peak	Orion	LRP	Airtronics	Elite	HPI	None	NA
2	1	David Jun	Tamiya	Peak	Orion	Novak	Futaba	Tamiya	Tamiya	None	22/stock
3	3	Tyree Phillips	Tamiya	Peak	Orion	Novak	Futaba	Protoform	Tamiya	None	22/stock
4	10	Chris Tosolini	Roadrunner	Maxtec	Orion	LRP	Airtronics	Elite	Yokomo	None	NA
5	5	Tim Long	Roadrunner	Associated	Orion	LRP	Sanwa	Elite	Yokomo	None	NA
6	8	Ken Gerberding	Roadrunner	Gamma	NA	Tekin	Airtronics	Elite	Yokomo	None	22/96
7	6	Jimmy Wright	Roadrunner	Gamma	Ballistic	Tekin	Airtronics	Factory Works	Yokomo	Gamma	26/90
8	4	Frank Killam	Tamiya	Maxtec	Sanyo	Novak	Airtronics	HPI	HPI	None	25/stock
9	9	Brian Fong	Roadrunner	Gamma	Double Strike	LRP	Airtronics	Elite	HPI	None	NA
10	5	Brandon McNally	Yokomo	Maxtec	Maxtec	Tekin	Airtronics	Elite	Yokomo	None	NA

GTP Modified

Fin.	Qual.	Name	Chassis	Motor	Battery	ESC	Radio	Body	Tires (F/R)	Traction Additive	Pinion/Spur
1	1	Mike Swauger	Associated	Reedy	Orion	LRP	Airtronics	Andy's	Jaco	Paragon	22/116
2	3	Josh Cyril	Associated	Reedy	Orion/Reedy	Novak	Futaba	Andy's	Jaco	Paragon	22/120
3	2	Mike Lufaso	Associated	Reedy	Reedy/Orion	Novak	Airtronics	Protoform	Jaco	Paragon/Coppertone	21/115
4	4	David Jun	Corally	Peak	Orion/Reedy	Novak	Futaba	Protoform	Jaco	Paragon	19/115
5	7	Paul Truex	Associated	Gamma	Ballistic	Tekin	Airtronics	Andy's	Jaco	Paragon	21/116
6	5	Barry Baker	NA	NA	NA	NA	NA	NA	NA	NA	NA
7	8	Charles Creamer	Comp. Craft	PSE	World Class	Tekin	Futaba	PSE	TRC	Paragon	23/120
8	10	Cortney Able	Yokomo	Maxtec	Team Smooth	NA	NA	Protoform	BSR	Maxtec	25/116
9	9	Sam Daugherty	Trinity	Litespeed	Litespeed	Novak	KO	Andy's	Jaco	Paragon	21/128
10	6	Brian Rutherford	Corally	Race Prep	Double Strike	Novak	Futaba	Andy's	TRC	Paragon	23/120

1/12-Scale Modified

Fin.	Qual.	Name	Chassis	Motor	Battery	ESC	Radio	Body	Tires (F/R)	Traction Additive	Pinion/Spur
1	2	Mike Swauger	Associated	Reedy	Orion	LRP	Airtronics	Andy's	Jaco	Paragon	22/110
2	1	Barry Baker	NA	NA	NA	NA	NA	NA	NA	NA	NA
3	3	Mike Lufaso	Associated	Reedy	Orion/Reedy	Novak	Airtronics	Associated	Jaco	Paragon	25/100
4	4	Josh Cyril	Associated	Reedy	Orion/Reedy	Novak	Futaba	Protoform	Jaco	Paragon	22/100
5	5	Dave Pease	Associated	Gamma	Ranch Pit Shop	Tekin	Airtronics	Andy's	Jaco	Paragon	22/100
6	6	Terry Martin	Associated	ECM	Orion	Tekin	Futaba	Protoform	BSR	Big Jim's	23/100
7	7	Cortney Able	Wood Racing	Maxtec	Team Smooth	NA	NA	BBR	BSR	BSR	23/100

Mini Sedan

Fin.	Qual.	Name	Chassis	Motor	Battery	ESC	Radio	Body	Tires (F/R)	Traction Additive	Pinion/Spur
1	1	Ken Gerberding	Roadrunner	Handout	NA	LRP	Airtronics	Elite	HPI	None	35/87
2	2	Paul Truex	Roadrunner	Gamma	Ballistic	Tekin	Airtronics	Elite	HPI	None	33/87
3	3	Tim Long	Roadrunner	Handout	Orion	LRP	Sanwa	Elite	HPI	None	NA
4	4	Jimmy Wright	Roadrunner	Handout	Hobby Shack	Tekin	Airtronics	Elite	HPI	Gamma	35/87
5	5	Edsel Labao	Roadrunner	Handout	Orion	Tekin	Airtronics	Elite	HPI	None	35/92
6	8	Oscar Fausto	Roadrunner	Handout	Ballistic	Tekin	Airtronics	Elite	HPI	None	35/87
7	6	Cliff Murakami	Roadrunner	Handout	Trinity	LRP	KO	Elite	HPI	None	35/87
8	7	Paul Freyre	Roadrunner	Handout	Trinity	Novak	Airtronics	Elite	HPI	None	35/87



**The F1 Stock winners with their trophies (left to right): Jay Kimbrough, second; Dominic Alessi, ROAR National Champion; and Sam Daugherty, third.**



**The Sedan Stock winners (left to right): Tim Long, second; Tim Bump, ROAR National Champion; and Ken Gerberding, third.**



**The GTP Stock winners and their cars (left to right): Brian Rutherford, second; Paul Smith, ROAR National Champion; and Greg Larson, third.**



**The proud Sedan Modified winners with their trophies and cars (left to right): David Jun, second; Tim Bump, ROAR National Champion; and Tyree Phillips, third.**



**The GTP Modified winners with their trophies and Associated RC10L cars (left to right): Josh Cyrul, second; Mike Swauger, ROAR National Champion; and Mike Lufaso, third.**



**The 1/12-Scale GTP winners with their trophies and cars (left to right): Barry Baker, second; Mike Swauger, ROAR National Champion; and Mike Lufaso, third.**



**The Mini Sedan winners with their trophies and Roadrunner GTO 962s (left to right): Paul Truex, second; Ken Gerberding, ROAR National Champion; and Tim Long, third.**



## A-MAIN ACTION

A three-Main format was used for all classes, with a throw-out heat that was to be used in the event of a tie.

• **F1.** Kimbrough and Alessi put on a phenomenal race in the A-1 Main. Alessi finished 13 laps at 4:13.17, with Kimbrough close behind at 13/4:14.20. In the second Main, Kimbrough broke off the line and was out of the race—a tough break that may have cost him the overall win. Alessi topped his best time in the second main with a 13/4:12.90 and earned the win in F1. Kimbrough took second, and Sam Daugherty was third.

• **Sedan Stock.** TQ Bump continued to dominate with his effective driving strategy: pull out ahead of the field, and keep it on all fours! He finished more than 6 seconds ahead of Tim Long in the first Main and 2 seconds ahead of Jimmy Wright in the second Main for the overall victory. In the third Main, Long, Gerberding and Wright battled for second and third. Wright had some trouble after his sixth lap, and this put him out of the race. Long finished first to take second overall, and Gerberding came in third.



**Bob Novak checks out Team Associated driver Josh Cyrul's setup. Bob is a font of knowledge and is always available to give a helping hand.**

• **GTP Stock.** TQ Smith piloted his Associated 10L around the track flawlessly, with Rutherford close behind. Rutherford's HPI Roadstar was quite a threat, but Smith managed to keep the door slammed on him. Smith won the first and second Mains, and this gave him first place overall. Rutherford was a close second, and Greg Larson took an honorable third-place finish.

• **Sedan Modified.** TQ Jun showed some very tight driving skills while fending off Bump. In the first Main, Jun had the lead until he and Bump collided on the last lap. Bump found an inside line past Jun to earn the win. In the second Main, Jun managed to keep Bump back while Tyree Phillips finished third. In the third Main, Jun got slammed at the start and ended up in ninth position. Some excellent driving allowed Jun to work his way up to fourth while



**IFMAR world champion Mike Swauger (center) always has a popular pit area.**

Phillips and Bump battled for first. Phillips was able to fend off Bump and finished first. After all the points had been totaled, Bump claimed victory, Jun finished second, and Phillips was third.

• **GTP Modified.** TQ Swauger was the man to watch! His Associated 10L was blazing fast. He won the first and second A-Mains and sat out the third to let the rest of the field battle it out. Josh Cyrul finished in an impressive second place, despite a minor power-loss problem that slowed him down a little at the end of each Main. Mike Lufaso took home the third-place trophy.

• **1/12-scale Modified.** The battle was among the top three drivers, Baker, Swauger and Lufaso. There was some extremely tight racing. Many "ohs" and "ahs" could be heard from the spectators who gathered to watch the nimble cars rocket around the track. In the first Main, Baker and Swauger juggled the lead. Baker finished first, with Swauger right behind him. In the second Main, Baker, Swauger and Lufaso were like a freight train through the S's. Near the end of the race, Swauger got the inside move on Baker and finished first. In the third Main, Swauger took the lead early. While attempting to pass Swauger, Baker rolled his car, and this caused him to fall to third. Baker didn't give up, though, and managed to finish second. This gave him second overall. Swauger finished first and got the overall win.

• **Mini Sedan.** Like the 1/10-scale sedans, these can sure take a beating! Top qualifier Gerberding kept his Roadrunner GTO out in front and avoided the many bumps and bashes that these little terrors of the track can dish out. He drove his car to victory by finishing first in the first two Mains. Paul Truex was second in line, followed by Long.

## FINAL THOUGHTS

The 1996 ROAR On-Road Nationals was certainly an exciting weekend of racing. Despite the small turnout of racers, there was plenty of action. Everybody had a good time, and many of the racers left with some really awesome trophies! My thanks go out to track owner Dana Smeltzer for all of his greatly appreciated help.



# Kyosho **World Cup** **Challenge** *Race number one*



The Kyosho World Cup winning drivers, Scott Walters (left) and Jeff Durling, pick up their plaques. Next stop the Philippines. Wow! What an honor.





# Motorin' in Michigan!

by Dave Ditner

**IMAGINE THIS:** you buy a sweet-looking, nitro-powered R/C car that's a blast to drive; you race it on a beautiful, sunny day with your buddies; you win the race; and the race sponsor sends you on an all-expense-paid trip to the Philippines, where you represent your country against drivers from around the world.

Sound like a dream? Not! It really happened last fall at Rider's Hobbies in Ypsilanti (pronounced "ippsulantee"), Michigan. Kyosho\* sponsored the World Cup '96 Nostalgic series, which would send 12 lucky fellas halfway around the world to play with their toys! The Midwest Regional race in Michigan was followed by an East Coast Regional in New Jersey and a West Coast Regional in California. The entrants competed in two-person teams (driver/pitman), and there were mandatory driver changes at regular intervals during the 60-minute A-Mains. The two top teams from each regional would then go on to the Philippines to represent the good ole USA in the World Championship!

## RACE ACTION

The day of the Midwest Regional couldn't have been nicer for racing. The sun god smiled on us all as we enjoyed the event. Pete Bergstrom and his crew from Rider's Hobby did a great job of coordinating the race. They even held a free raffle for one of these sweet toys. Spectators Jim Downing and his son John were the lucky ones to take home the '67 Corvette. They had never owned this caliber of R/C stuff before, but judging by the looks on their faces, this won't be Jim's or John's last R/C car!

The track layout was quite cool. There were two long straightaways, chicanes, high-speed corners and some pretty nasty hairpin turns. It was set up in the corner of a Wal-Mart parking lot. A local radio station even covered the event! Dan "Banana Man" Moynihan emceed the race and mingled with the crowd.

Even though Dan wasn't wearing his trademark banana suit, he provided much entertainment and information to the spectators. During the intermission, he gave some youngsters a chance at the

wheel of Kyosho's electric Indy car. These kids couldn't drive for beans, but they sure had fun! The electric car proved its durability by taking in style every one of

## Kyosho gets Nostalgic

**T**he Kyosho World Cup '96 Nostalgic Series Races were held to promote the company's 4WD GP-10 (glow-powered, 1/10-scale) Spider sedan cars—specifically, the Nostalgic Series. Kyosho GP sedans with Kyosho hop-up parts were the only vehicles allowed. This rule was made to keep drivers on a relatively even playing field. But Kyosho has a whole mess of cool upgrade goodies, so entrants were able to tweak to their heart's content.

At the Midwest Regional, some racers had all the sweet stuff on their cars. Others ran the cars bone-stock, right out of the box! The mods of choice were ball bearings, 2-speed trannies, tuned pipes, swaybars, belt tensioners and oil shocks with green springs in the front and orange springs in the rear. These hop-ups really make a difference in the cars' competitive level. If you've never seen a car run with a 2-speed tranny before, let me tell you, it's quite a sight! The car winds out in low gear, and then you can actually hear it shift—kinda like "waah-waah." There's even a tell-tale puff of smoke as gears change! You could see the

crowd of spectators marvel at the cars as they zoomed past, shifting into high speed! This race series is sure to bring newcomers to our awesome hobby.

Kyosho's GP 10 Spider cars were designed



with the novice in mind. First, they come with the durable Kyosho GS11X pull-start engine. These racers swore by this powerplant's reliability. Throughout the race, there were no pull-start related problems! I think that's amazing. The engines, though not comparable to the evil O.S. .12 CZ-Z and CV, have quite a bit of grunt, and when they're attached to the optional 2-speed transmission, the cars really scoot! Second, the instructions are quite clear, so even the mechanically challenged should be able to successfully assemble and run the vehicle. Third, the cars are downright cheap! How does 300 bucks complete (car, engine, radio) sound? They're an excellent value!

These cars are most cool. The body detail is topnotch. You can choose from a '67 Corvette Stingray, an MGB Mk-1, a Ferrari 250 GTO or 330 P4, a Ford GT40, or my favorite—the newly

released Shelby Cobra Daytona Coupe. Kyosho also offers the chassis with modern bodies like the Mercedes-Benz, Opel Calibra, Camaro, Nissan Skyline, Porsche, etc. At the World Cup Regionals, racers were sup-

posed to run Nostalgic bodies, although many at the Michigan race opted for the more modern bodies that Kyosho offers. At the finals, however, only Nostalgic bodies will be permitted.



Even the spectators were winners at this event. Jim Downing and his son John picked up a snazzy Kyosho '67 Vette just for showing up. Who knows? Maybe they'll be racing at the next event. Wouldn't it be something if they won?



the walls the kids ran it into.

The qualifying started at 8 a.m. sharp. The racing teams, who had practiced the day before, prepared their cars. Final adjustments were made, and the qualifying rounds began. The top 10 racing teams would make it to the A-Main to compete for the shot at the World Championship. Not only was driving skill important, but quick pitting also played a key role in winning the 60-minute Main. During pit stops, the pit men had to fuel the cars and fine-tune the vehicles as the race progressed. Both members of each team had to be skilled in both endeavors because they had to switch duties at 15-minute intervals!

The race began, and Scott Walters' and Jeff Durling's gray Taisan Porsche stormed out to a commanding lead. Their car was totally dialed, and as a result, it completely dominated the day. The drivers had practiced hard, and it showed. James Brown and Jon Ferman drove their orange splatter-painted Ford GT 40 rather consistently and pretty much held second place nine laps down from the front-running Porsche the entire race. Forty laps separated



*Race promoter Dan Moynihan teaches a youngster how to pilot an R/C car. The youngster demonstrated the durability of the Kyosho F1 cars by repeatedly running it into walls. Hey, you got to start somewhere!*



*Some of the action during one of the qualifying heats. As you can see, turn marshal Marie Bergstrom really gets into her work!*

# ON THE INFORMATION SUPER

## Cursor to the button, Pedal to the metal

On the information superhighway there are no speed limits. When you log onto the Serpent TSN Internet web site, you move into the fast lane of cyber R/C: Detailed information on car dynamics and tuning, timely race reports, even a racer forum for you to discuss R/C subjects on a global scale. The only real limits are how fast you want to go, and how much fun you want to have.

If you're into R/C, check out the Serpent TSN internet site. Because the track isn't the only place where Serpent is speeding.



<http://www>





**A view of the covered pit area. Lots of bench racing took place under this tent.**



second place from third. That's some great driving, guys!

Needless to say, the two top finishing teams were pretty geeked about winning the trip to the Philippines! These guys aren't factory racers; they're regular guys who have fun with their cars. That's what R/C cars are all about—fun.

**Teamwork was the key to success at this race. Each team consisted of two people, a driver and a pit man/mechanic. A lot of hat-swapping went on at this event because the driver and pit man had to switch roles from time to time. Just imagine competing in a 60-minute Main. I get tired just racing for 5 minutes!**

This race exemplified what is needed to gain wide interest in this hobby. Kyosho and other manufacturers should be commended for their efforts to gain exposure for family-oriented, or sport-level, racing. Kyosho's World Cup Races are very enjoyable, and just think, you, too, can win an excellent R/C gas car and go for the gold!

*\*Addresses are listed alphabetically in the Index of Manufacturers on page 201. ■*



**The folks responsible for putting on the race (left to right): Kyosho USA's Bob Klecka, Marie Bergstrom and Pete Bergstrom from Rider's Hobby and Dan Moynihan from Dan's R/C.**

# HIGHWAY... WE'RE SPEEDING

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HOBBY SHACK

# Hobby Expo

BY STAFF • PHOTOS BY GARY BENDER

**T**HE PARKING-LOT RACING fervor is growing, especially in Southern California. For years now, Hobby Shack\* has been feeding the fire with a racing program that excites drivers of all skill levels, ages and interests. These events are centered on cordial competition in a first-class, family-friendly setting. Rookie drivers as young as six may race on the same day—and on the same track—as world class champions like Joel Johnson from Trinity\*. All enjoy these events.

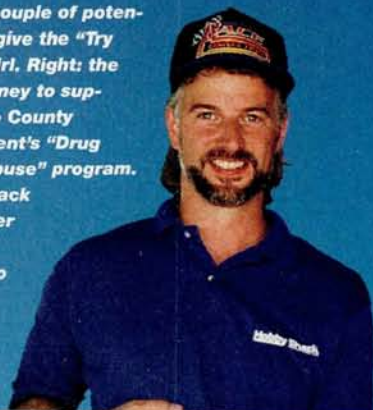
Hobby Shack knows that when rookies have a sense of accomplishment, they'll stay in racing. To that end, Hobby Shack's "Blue Crew" (employees who staff the events) spend the day helping rookies in all aspects of racing to ensure their success. And to hold the interest of seasoned racers, the event is well-organized, and track setup is topnotch. Classes range from rookie gearbox to modified/expert sedan; this means that almost every kind of R/C electric car out there has a place at a Hobby Shack parking-lot race.

This year, Hobby Shack celebrated the success of parking-lot racing with the Race Connection Expo-2. Last year, Hobby Shack set up quite the shindig at the first Expo held at its Riverside, CA, store. This year promised to be everything that event was, and more.

2


## The Blue Crew strikes again!

*Above right: a couple of potential R/C racers give the "Try Me" track a whirl. Right: the Expo raised money to support the Orange County Sheriff Department's "Drug Abuse Is Life Abuse" program. Here, Hobby Shack General Manager Rick Pike presents a check to program representatives.*



<b>RACE CONNECTION EXPO</b>		Date: <u>August 24, 1996</u>
Pay To The Order Of: <u>Drug Use Is Life Abuse</u>		\$ <u>\$1,000.00</u>
<u>One Thousand and 00/100</u>		Dollars
<b>Hobby Shack</b> <small>18480 Blandlier Circle          Fountain Valley, CA 92728</small>		
Memo:		
<u>Hobby Shack Inc.</u>		





The Hobby Expo-2 drew over 120 racers from all over Southern California. Classes accommodate nearly any R/C vehicle. If it has wheels, chances are at a Hobby Shack event you'll find a place to race it.



## Kwik-Trax Debut

The Expo-2 was also the first chance for Hobby Shack to try its new Kwik-Trax track-barrier system. The barriers allow a cool track layout, and they're easy for the crew to clean up. And although the corner markers can really launch your car, the racers soon got the feel for the track, and the competition began.





The Race Connection Expo-2 was held in the parking lot of Hobby Shack's new store in Mission Viejo. The new store is ultramodern and even has its own rental and slot-car tracks, but the Expo-2 made it all the more spectacular. More than 120 drivers in more than 170 entries—quite a sight. Some national championship races don't draw this kind of crowd.

Community was what the Expo-2 was all about. For those already into racing, it was about bringing the racing community closer to the manufacturers. Great names in the R/C hobby such as Tamiya\*, Trinity, Pro-Line\*, Hitec\*, Peak Performance\*, Novak\*, HPI\*, Futaba\*, Traxxas\* and Tekin\* (14 manufacturers in all) displayed their latest performance products in the manufacturers' tent. To give the racers the benefit of their vast experience, these companies sent top representatives—including Joel Johnson and Brian Kinwald from Trinity and Kent Clausen from HPI.

The Expo-2 was also about bringing R/C racing to the community at large. An outdoor event just begs for spectators, and this race got its share. Local radio station KIK FM brought out its DJ "the Cisco Kid," along with all kinds of free stuff. While he gave away CDs and concert tickets, the Kid relayed the fun and excitement of the event to listeners all over Southern California.

Perhaps the biggest hit of the Expo-2—besides the racing—was the Orange County Sheriff's Department "Chuck the Drug Free Truck" display. Chuck is part of Orange County's "Drug Use is Life Abuse and Project: No Gangs" school program. There was also a smaller, "Try me" R/C

**Inside the manufacturers' tent. Representatives from 14 companies displayed their latest products, chatted with the racers and spectators and enjoyed the California sunshine.**



track on which hundreds of kids got to run R/C car racing with Bolink\* cars decorated to resemble Chuck. Using the R/C cars was a great way to demonstrate our hobby to kids while letting them know about the sheriff's program.

## ON THE TRACK

The day started with the Concours event. The cars were judged for scale realism and detail. The competition in all classes was intense, but it was toughest in the sedan class. These cars had been detailed right down to the disk brakes, air hoses for the drivers' helmets and even maps for the navigators.

This year's races included some of the hottest drivers from all over California. Almost all types of road racers raced that day, including the following classes: F1 (rookie, stock, expert), sedan (rookie, Tamiya stock, belt-drive stock, expert),

M-chassis (rookie, stock), direct drive (stock, expert) and gearbox (rookie, pro-stock). Race after race, round after round, some of the most spectacular racing in the area took place

right on that rough parking-lot surface.

The standard two rounds of qualifying and the main events took an incredibly short amount of time. To help speed things along, this year's track featured a transponder lap-counting system.

Interspersed with the races were exhibitions by Team Trinity. To promote Street-Spec racing, Trinity brought in



**A "Blue Crew" member tech-inspects an entrant's car before a qualifying heat.**

some heavy hitters, including Brian Kinwald and Joel Johnson. Between heats, these guys did battle on the track, street-spec style, much to the enjoyment and cheers of the crowd. Street-spec showed itself to be quite exciting, and the cars were really easy to set up.

Like its first expo, Hobby Shack's Race Connection Expo-2 was fun for everyone and a major success for R/C motorsports. Hundreds of people got to check out R/C car racing. Racers were able to talk to the major manufacturers and some world champion racers. And everyone had a chance to show off to the whole world and a chance to win free stuff. The Expo-2 was a giant success. It makes you wonder how those Hobby Shack guys might top this event in Expo-3!

*\*Addresses are listed alphabetically in the Index of Manufacturers on page 201.*



**Above: a contingent of "serious" racers talk touring-car setup. Right: the Trinity guys gave one heck of an exhibition of the company's Street Spec supertruck racers. Trinity "big guns" Joel Johnson (left), and Brian "the Dirtinator" Kinwald showed that they know how to race for fun, too!**





# Make Narrow Sedan Tires

## The Tire Surgery Saga

by Aaron Biner

**M**ANY TOURING-CAR RACERS have found that on smooth, high-bite track surfaces, super-narrow tires offer several advantages over the more common standard-width tires. First, super-narrow tires provide much quicker cornering because they will not flex or roll over on themselves like some of the softer standard-width tires have been known to do. Second, a car equipped with super-narrow tires will accelerate and stop more quickly because super-narrows are considerably lighter than standard-width tires. Finally, super-narrow tires have less rolling resistance than their standard-width counterparts; this translates into increased speed. With benefits like these, you can see why super-narrow tires have been dubbed the hot ticket by touring-car racers around the globe.

### WHAT IS SUPER NARROW?

A super-narrow tire is approximately  $\frac{7}{8}$  inch wide; a standard tire has an approximate width of  $1\frac{1}{8}$  inch. If you haven't been able to find these super-narrow tires, don't fret. You can easily

make your own by narrowing standard-width tires. Of course, to accommodate your homemade super-narrows, you'll also need to narrow standard-width wheels, but this, too, is surprisingly easy.

### SLICE LIKE THE PROS

To narrow a tire, you'll need to cut out or remove a section of its middle, then glue the pieces back together. It's said that the first to use this technique was Team Yokomo\* driver Masami Hirotsuka. Masami would cut up a set of off-road rear tires to make them fit on his 4WD buggy's narrower front wheels. This practice is now common among 4WD off-road drivers because very few popular rear tires are made to fit most 4WD buggies' narrow front wheels. Because the selection of rear tires is seemingly endless, narrowing rear tires to fit the front wheels has become common in 4WD off-road racing.



### Things You'll Need

Before you begin to hack and slash away at your touring car's tires and wheels, first properly equip yourself. You'll need:

- A pair of extremely sharp scissors.
- A hacksaw or a Dremel\* tool equipped with a cut-off tool.
- Thin CA in a bottle with a very fine tip.
- The tires, along with foam inserts.
- A pair of standard-width wheels.
- Patience.



### 1 Cutting the Tire



First, use sharp scissors to cut each standard-width tire down the middle; on a treaded tire, you'll use one of its grooves as a guide. Find the groove(s) closest to each tire's center. Tires vary in tread patterns, and you might have a set

that doesn't have center grooves or treads. Many tires have offset treads and grooves, so use common sense before you start to slice and dice. (Note: although it's difficult to narrow a slick, it can be done if you can somehow mark a couple of guidelines on it with a pencil or white-ink pen. Before you attempt to work on a slick tire, practice on treaded tires until your skills improve.)

Cut the rubber inside one of the grooves, and use the tread itself as a guide for the scissors; you might use a sharp hobby knife for the initial slice.



You'll then have a tire in two pieces, with one of the halves slightly wider.

Next, start to cut along the groove of the wider half, using the tread as a guide. Be sure to leave a  $\frac{1}{16}$ -inch gap in front of the tread. When you glue the halves together, this will leave a small gap between the two treads that will also serve as a reservoir to catch any spilled glue so that it won't harm the tire's



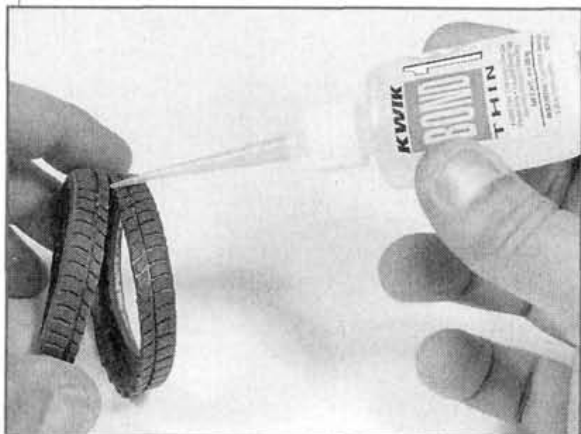
tread. If you want to make your tire even narrower, don't leave a gap between the treads. The nice thing about making your own super-narrow tires is that you can make them any width; in most cases, removing  $\frac{1}{4}$  inch of material is just perfect.



## 2 Gluing

This is probably the trickiest part. The key is to use as little glue as possible because while the glue is drying, you must hold the two halves of the tire together with your hands. Using less glue will ensure shorter drying times. Besides, if you use too much glue, you'll glue the tires to your hands—fine if you don't mind the nickname "Edward Radialhands." When you buy a new bottle of CA, be sure not to cut off too much of its tip or the glue will spill out. Pick up some extension tips for your CA bottle at a hobby or crafts store. These tips allow only a little CA to trickle out at a time.

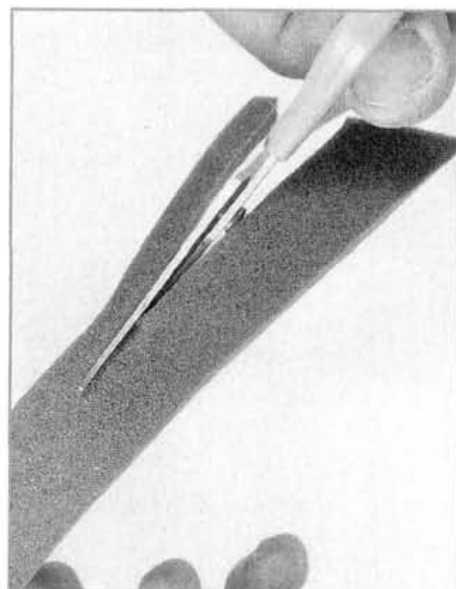
To glue, first, apply a little thin CA to the edge of each half of tire. Immediately put the halves together so that the tread closely resembles the previous tread pattern, and hold them together until the glue has dried. Thin CA works best here because it dries quickly, and it seems to keep the tire almost as naturally soft as it was before the surgery.



Some racers find it easier to glue the tire halves together a little at a time—in  $\frac{1}{8}$ -inch sections—instead of all at once.

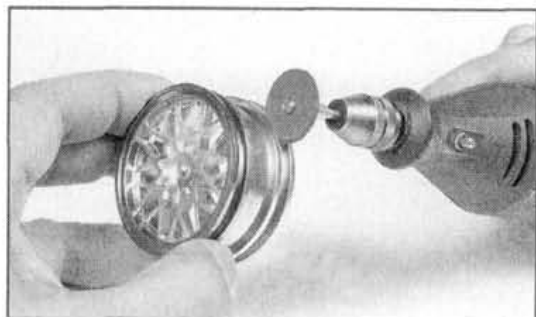
When the glue has completely dried, try to pull the tire apart at the seam you've just made. If you find weak spots that did not bond, reinforce them with CA and allow it to dry.

## 3 Narrow the foam inserts

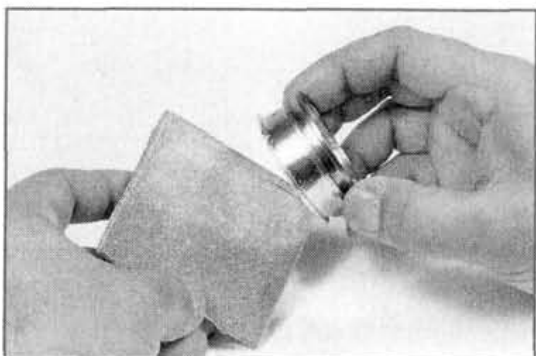


Simply cut them down by approximately  $\frac{1}{4}$  inch. Whatever you do, be sure to use foam inserts or your narrowed tires will not receive enough support and the halves will fly apart when the wheels spin at fast rpm.

## 4 Narrow the wheels



With a hacksaw or a Dremel tool that's equipped with a cut-off wheel, cut along the inside slot (the groove where the tire's bead is mounted) of the standard-width wheel. Cut to the slot's inside lip, but don't remove the lip, which provides reinforcement for gluing and will support the tire's sidewall when it runs. Use sandpaper or a shop file to clean up the uneven edges.



## 5 Mounting

Put the narrowed foam inserts that you prepared earlier inside your new narrowed tires. Next, place the tire on the wheel and glue (using thin CA) the outside bead of the tire to the outside lip of the narrowed wheel. When this is dry, flip the tire over and pull its inside bead as close as possible to the wheel's inside edge. Using CA, glue the tire's edge to the wheel.

When you apply the glue, try to place it where the flat portion of the rim comes in contact with the flat rubber bead of the tire; this will ensure the tire stays glued.



After the glue has set, check that the tires are glued evenly along the entire radius circumference of the wheel by trying to pry up the tire one section at a time. If you find an area that has not been glued properly, add more CA there.

So there you have it. The more you practice, the better you will be able to narrow touring car tires. Hey, Masami Hirose didn't produce a perfect tire his first time out. I'm sure it took him several attempts to become proficient in the art of slicing and dicing.

*\*Addresses are listed alphabetically in the Index of Manufacturers on page 201.*





by Mark Stitson

GAS OFF-ROAD

# World Championship

**I**T WAS the sixth, Gas Off-Road World Championships, but the first to be held in Britain, and the huge track brought new meaning to the term "racing green." It was perfect, never-before-raced-on grass!

Held every two years, in '96, the event—and the track that went with it—was a credit to Mick Hill and the organizing committee. The setup at the National Motor Museum, Beaulieu, Hampshire, England, was perfect for racers and spectators.

The track was excellently laid out, and the incredible drivers' stand afforded everyone a great view of it. Spectators sat on a natural grass bank—a great location. Two huge tents housed the pits (every driver had a large table) and the food and entertainment. There were also "hospitality" areas for sponsors, the press, race control and technical inspection—a magnificent setup.

The British drivers were hoping that the perfect grass track would hold up for a long time because this is the kind of surface they know best, and drivers from other countries rarely see this type of track. In the past, the Brits had to struggle with a vari-

ety of surfaces—hard-packed, slippery dirt, ultra-bumpy, inconsistent, etc.—so this time, they hoped for the home player advantage.

In qualifying, points were awarded for your position in each of the six rounds, and the best four scores were totaled to obtain your final score. This was the first time the event organizers had used this system. To try to give everyone a fair deal, the heat order was varied from round to round.



PHOTOS BY MARK STITSON





# Winners

Fin.	Qual.	Driver	Chassis	Engine	Fuel	Radio
1	4	Alex Laffranchi	Kyosho	Picco	Picco	KO
2	15	Philippe Lachat	Laro	OPS	Model Technics	Sanwa
3	11	Jamie Booth	Kyosho	O.S.	Model Technics	JR
4	1	Daniel Reckward	Laro	RB	RB	Futaba
5	5	Alessandro Catozzi	Tag	OPS	Tag	Sanwa
6	2	Marco Grandesso	Tag	OPS	Tag	Sanwa
7	32	Cliff Lett	Kyosho	Picco	O'Donnell	Sanwa
8	9	Matteo Dapporto	Tag	OPS	Tag	Futaba
9	3	Mark Pavidis	Mugen	Rex	O'Donnell	Airtronics
10	8	Lawrence Harris	Kyosho	O.S.	Superglo	Futaba

**Note:** Medial Pros were the tires of choice for all drivers.

**Alex Laffranchi is a happy IFMAR World Champ. The Kyosho MP-5 is a tough act to follow.**



## MAIN EVENT

The level of anticipation was intense as the drivers were introduced to the crowd. The track had become rough, so winning would require a great deal of driver concentration and equipment reliability. Who had made the cut?—three Italians, two Brits, two Americans, one Frenchman and a German. As for equipment, Kyosho\* was leading with four, and there were three Tags, two Laros and a solitary Mugen\*. Top engines seemed to be those from OPS\* (four), and there were also two from O.S.\*, two Piccos\*, one RB, one Rex and a Dutch engine that few of us recognized.

Right from the start, Laffranchi dominated with his Picco-powered MP-5, but pole man Reckward and France's Lachat

(eighth on the grid) weren't too far behind. Grandesso was fourth; Booth and Harris were in fifth and sixth. Early on, a few key mistakes lost Euro champ Catozzi the race.

After 15 minutes, Reckward slipped back after an engine cut out in the pits. Soon afterward, Harris was out with a broken universal joint on his MP5. Incredibly, this was the hour-long race's only serious breakage. See how strong and reliable 1/8-scale off-road cars have become? At the front, Laffranchi relentlessly churned out 49-second laps to open up a huge advantage over Lachat, Reckward and Booth.

Dapporto's engine trouble took him down to eighth, but he still had a tremendous year, because he made both the Euros and the Worlds finals for the first time. Engine gremlins also fouled Cliff Lett (seventh), but he put on a great show.

After 50 minutes, Laffranchi had lapped the entire field, but the battle for the next three places was still hot. Lachat, Grandesso and Booth were very close. Then, to the cheers of the crowd, Booth charged past Grandesso, whose engine cut and landed him in sixth. Despite engine cuts, his Tag teammate, Catosu, was fifth, but toward the end, he seemed to be one of the best on the track. Reckward took fourth—again, despite engine trouble; Booth couldn't quite catch Lachat for second, but finished with a brilliantly won third. Lachat's final showing was remarkable because he hadn't been on the pace all week—but he was when it mattered.

But no one could really touch Laffranchi, who won by more than a lap—a staggering margin in any race. He has always been a force to reckon with,



**The pit area was well-protected by a large tent. As you can see, the cars weren't the only huge things at this event.**

but we've never before seen him keep it all together in a final. Kyosho will obviously want to keep him; rumor also has it that Italian Andrea Gennari will leave Crono to drive for Kyosho again. I spotted Maurizio Monessi (world champion in 1988 and 1994) with some Mugen items in his grasp. Though they previously tended to work together, Monessi will drive for Mugen while Gennari will be with Kyosho. Nothing surprises me in 1/8-scale off-road!

We congratulate everyone involved with organizing the event. It is hard to remember all those who gave up their time, but Mick Hill did a grand job, as did Paul Dudley, Dave Mackey and Kevin Griffin, who also put in a lot of work trackside. James Weedon gave us an absolutely brilliant commentary. With some assistance from Pete Winton, he made the racing so much more enjoyable to watch, and I know that the spectators would agree that this was an exciting event. Ken Weedon also put in countless hours managing the computer side of things; the program he designed for the event ran faultlessly and provided valuable data.

To all who made the event so memorable: well done!

\*Addresses are listed alphabetically in the Index of Manufacturers on page 201.



**Check out this car. Tag is the name and winning is its game. Three of these buggies made the final. Notice how the body wraps around the chassis and the air filter—very nice!**



**The Brits definitely had the home-court advantage. Racing on grass? I'm sure the folks at Kyosho, Mugen and others didn't know that their cars make excellent lawn mowers.**



From the track to the parking lot.  
This is the R/C action as **you** see it.

# Grassroots

**T**his is YOUR PAGE! That's what "Grassroots" means—from the roots—the ground up; and that means YOU!—real, live R/C'in' readers—an entire page of your stuff! Show the world—yes, everywhere from here to there—what you and your R/C friends are doing. Wanna brag? Here's the spot. Go on; show us! Send photos with captions to "Grassroots Racing," *Radio Control Car Action*, 100 East Ridge, Ridgefield, CT 06877-4606.

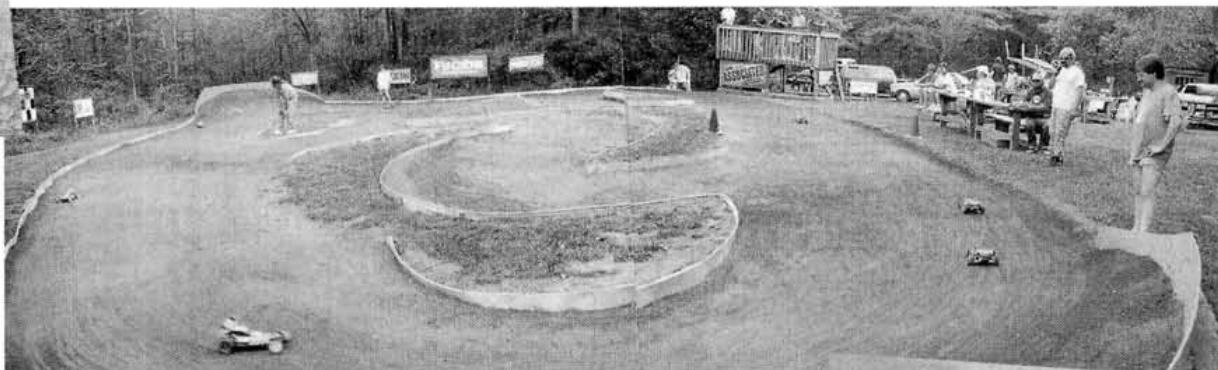
**U**three years ago, a member of the Beach Hill Speedway club clipped the form from our Track Directory section and sent us information about their track in Watkins Glen, NY. Track director Jim Riley recently wrote again to tell us that the dirt-oval track, now in its fourth season, is still thriving. A growing number of racers attend weekly, and people from as far away as Florida—hardly a stone's throw from blustery upstate New York—have shown an interest.

Weather permitting, racers gather every Sunday to run in three 2WD classes—Novice, Pro-Stock and Mod—and Monster Truck. Racing in all the classes is fast-paced and action-filled, but Jim tells us that it's the trucks that really pull 'em in!

It's always good news for us when we hear local racers are still in the front lines capturing the attention of fellow grassroots racers and local spectators alike. Our hobby is alive and kicking!



**This "Monster" hops into the bumps and turns of the Beach Hill track without a problem.**



**Above: Mark Lowe captured Best of Show with his 1/10-scale on-road Panther car, hand-painted with the Florida Panther's team logo on its side.**



**T**he Rainbow Riders of the Southwest Florida R/C Raceway got the rain but not the rainbow! When they invited racers along for the Region 4 Oval Championships, rain from the hurricanes that were tearing apart the Carolinas brought the event to a close—before the Mains!

Unconventionally, TQ'ers were called the winners and walked away with trophies that might have ended up in different hands if Mother Nature hadn't interfered. Everyone agreed, though, the qualifiers were the just recipients of their rewards. Maybe it's true then for some: every cloud does have a silver lining!

**Left: Jim Fuller proved himself tops in the 1/10-scale qualifiers. When the weather rained out the Mains, he was automatically declared the winner.**

## Down South



## R/C UP & DOWN THE EAST COAST



**Above: the club gathered for this shot in the middle of the track with their 2WD vehicles and monster trucks. Check out that drivers' stand in the background.**

**Below: the 200-foot clay track consists of three turns. Turn 1 is flat and offers a 56-foot straight-away; turn 2 is high banked and allows full-throttle action as it smooths out into an 86-foot back straight; turn 3 is a big sweeper that leads into the 58-foot front straight.**

### call now!

Whether you're a dealer or just a bunch of fun-lovers in search of a race program, call now! Here are a few hotline numbers to call if you have any questions, or if you'd like to start a program in your area.

**Bolink Legend Series**  
(404) 963-0252

**Tamiya R/C Championship Series**  
(800) TAMIYA-A

**Kyosho R/C Sport Racing**  
(800) 682-8948 ext. 085F

**Hobby Shack Parking Lot**  
(714) 964-8846

**Hobby Town USA Parking Lot**  
(402) 434-5050

**Trinity's Street Spec Series**  
(908) 862-1705



# Servo Tape Tricks

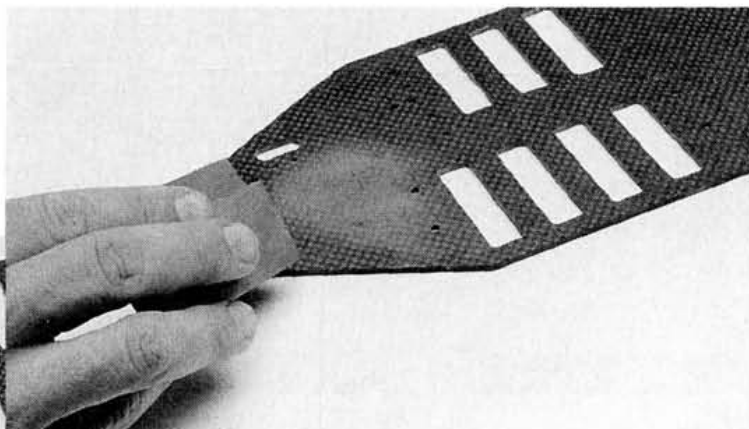
by Jack Johnson

## Sticky solutions

**S**ERVO TAPE, two-sided tape, or double-sided tape: it's all basically the same, and I'm sure that at some point, every one of you out there has used it. Some of you have found that this tape can be difficult to remove once it has been in place for a while; others have probably found that servo tape just doesn't hold a steering servo in place firmly enough. Here are a few tricks to using servo tape that can help you solve these problems, as well as a couple of others, such as glitches resulting from installing a receiver on a graphite chassis and having messy wiring around the electronic speed control.

### 1 Start with a clean slate

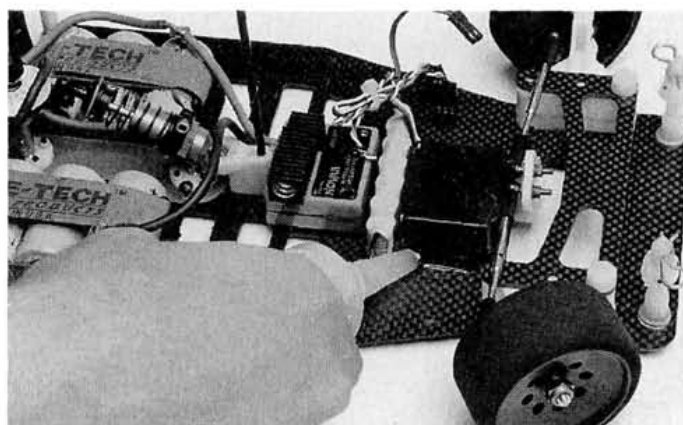
Before you apply servo tape to any surface, the surface should be cleaned. Rubbing alcohol works best for this because it dries quickly and leaves no residue. Motor cleaner also works, but be careful! Some of the available motor cleaners can leave an oily residue. If you plan to apply servo tape to a piece of laminated graphite, the target area on the graphite sheet should be prepped.



Scuff the graphite with ultrafine sandpaper to remove the shiny epoxy coating from the surface. This coating can sometimes be very slippery, and this makes it difficult for the servo tape to bond to the graphite properly. Once the area has been scuffed, clean it with alcohol or motor cleaner to remove any leftover dust.

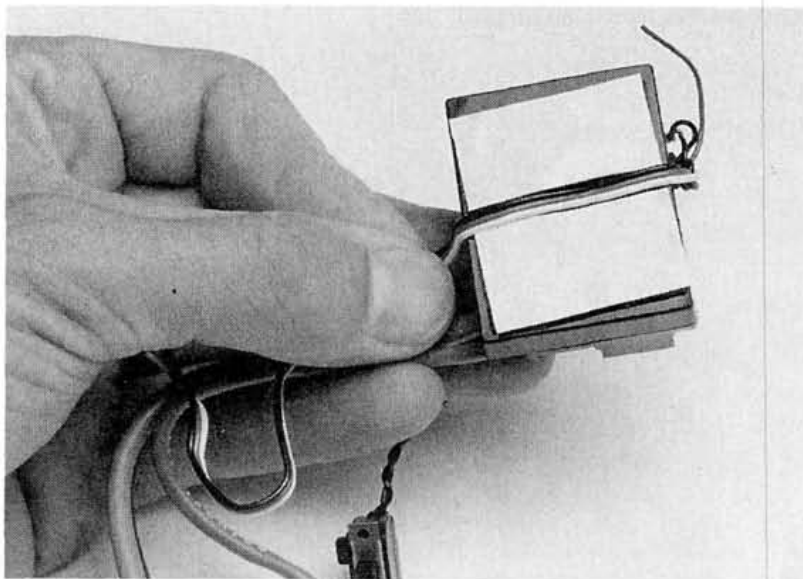
### 2 Get a grip

In some situations, you just can't install a steering servo with servo-mounting posts. In these cases, servo tape must be used. The problem is that servo tape alone usually isn't strong enough to hold the servo firmly in place. To solve this problem, you can use Shoe-Goo or Goop in conjunction with the servo tape. Attach the servo to the chassis with the servo tape, then apply a thin bead of Goo all the way around the base of the servo where it meets the chassis. Allow it to dry for at least a couple of hours (letting it dry overnight is actually preferable). The servo will be mounted as solidly as a rock.





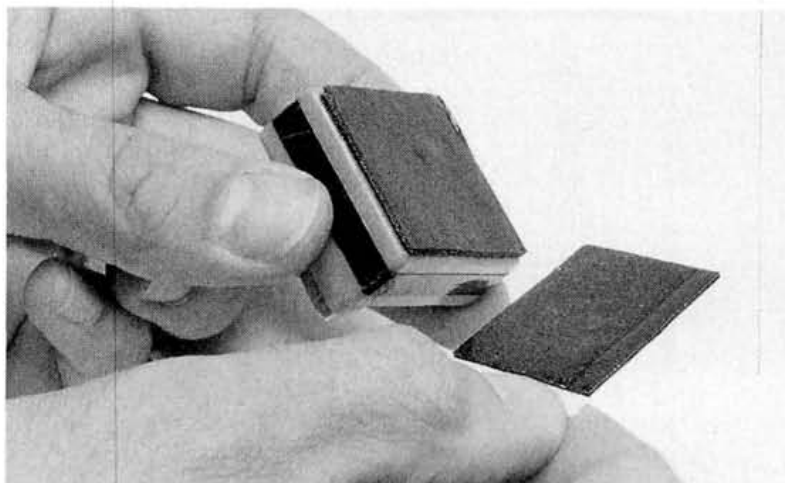
### 3 Neat wiring



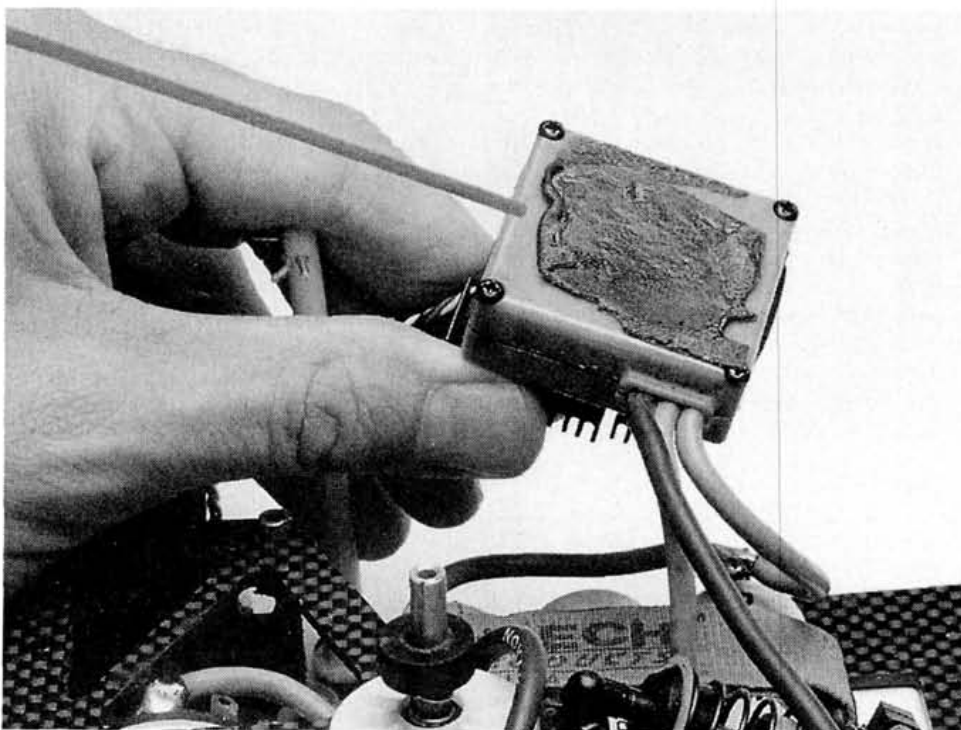
If you've ever wondered how to keep your wiring looking neater, try the "sandwich" method. The wires leading from an electronic speed control (ESC) can be sandwiched between the speed control and the chassis so that the wires can pass under the ESC. Attach two pieces of servo tape (three or more if you're using thin tape), one on top of the other, to the bottom of the ESC (be sure to remove the backing from each previous layer). Using a hobby knife, make a channel in the tape by cutting near the center of the ESC. Run the wires in this channel before you stick the ESC to the chassis. With the wires in place, remove the backing from the servo tape and install the speed control. The wires will now be tucked neatly underneath it. This method can also be used when mounting your receiver to hide the servo and speed-control wires running to it.

### 4 De-glitching

Because they conduct electricity very well, graphite parts, especially chassis, can sometimes cause radio interference (glitching) nightmares. Some of this interference can be eliminated by increasing the distance between the receiver and the chassis. Instead of using one piece of servo tape, use three pieces, one on top of the other. Not only will this eliminate some of the glitches, but it will also serve as a shock absorber for the receiver. The life of the receiver can be greatly extended by eliminating some of the vibration in this way.



### 5 Cleaning it up



The adhesive left behind after you remove servo tape can be very difficult to deal with. If the adhesive is not completely removed, a new piece of servo tape may not stick very well. Using motor spray is the easiest way to completely remove the leftover adhesive. Spray the area and allow the spray to soak into the residue. After about 30 seconds, you should be able to easily scrape it off. If some adhesive remains, repeat the process until it has all been removed.

To help remove newer pieces of servo tape, try heating it with a hair dryer. The tape should come off in one complete piece once it has been heated thoroughly.

So, there you have it: five ways to use servo tape to get out of sticky situations. ■



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## PRODUCT WATCH

(Continued from page 41)

The Cyclone's instructions provide several options for installing the power capacitor. I elected to attach mine to the side of the ESC's casing.

The Cyclone also has solder posts for its three main power wires (motor/battery positive, motor negative and battery negative). Novak didn't invent this feature, but in my humble opinion, theirs are the easiest to use. The posts are easily accessible to the soldering iron's tip, and they're far enough apart so that it's nearly impossible to accidentally trail hot solder from one post to another and cause a short. I chose to hard-wire the Cyclone to the motor and battery (as many racers do), and I installed one Schottky diode (included) to the motor's tabs to provide consistent braking performance.

Once the ESC has been installed and wired, you must match your transmitter's settings to the chart provided in the Cyclone's instructions, then use the One-Touch Set-Up™ button to calibrate the ESC to the transmitter. The setup chart covers most popular racing transmitters, but don't worry if yours isn't on the chart; Novak provides a list of general settings that should work with all brands and models.

## TRACK TEST

I decided to test the Cyclone in my Team Losi Double-X 'CR' buggy at a bumpy, and somewhat slippery off-road track. The first thing I needed to do was to select one of the three throttle profiles, which are accessed through the ESC's One-Touch Set-Up™ button.

Until you're totally familiar with the Cyclone, *take the instructions* with you whenever you race! Selecting a profile is a somewhat involved process: turn on your transmitter, then switch on the Cyclone; press and hold the One-Touch™ button for 6 seconds (until the LED turns solid green). Once you release the button, the LED will blink red; pay attention!—because the number of blinks tells you which profile you're in (one blink for Profile 1, etc.). To change profiles, press and release the button once again. For example: if you want Profile 3, continue to press and release the button until the LED blinks three times. After about 5 seconds, the LED will turn solid red, indicating that the Cyclone has "loaded" the profile.

I started with Profile 1, which is recommended for 1/10-scale off-road. I was using an 11-turn modified motor, which, on this particular track, requires deft throttle control. The first thing I noticed about the Cyclone was that I really liked the adjustable dead-band area. During a race, my throttle finger tends to slide

around on the trigger, causing me to accidentally hit brakes now and then. The 9-percent dead-band completely eliminated this.

The next thing that impressed me was how *consistent* the Cyclone felt. Lap after lap, the feel of the ESC remained constant for each corner, straightaway and jump. Some ESCs I've used have felt as if their throttle positions actually "wandered" a little during a run, making me think "Hey! Where did that come from?"

As smooth as the Cyclone felt, I still didn't notice much of a difference between it and some other racing ESCs I own; it drove excellently, but I guess I was looking for a *startling* difference. A revelation occurred when I switched to Profile 3 (recommended for 1/12-scale cars). Wow! Where I had been experiencing wheel spin while exiting corners, my car now felt as if it were on rails. The higher operating frequency and low minimum-drive value of this profile absolutely tamed my car's horsepower to a level where it became almost docile on this slick track. Maximum straightaway speed is, of course, unaffected by any profile change.

I expect that, for high-bite tracks or for stock-class racing, I'd probably switch back to Profile 1 or even 2. But for less than overwhelming traction, I'm sticking with Profile 3!

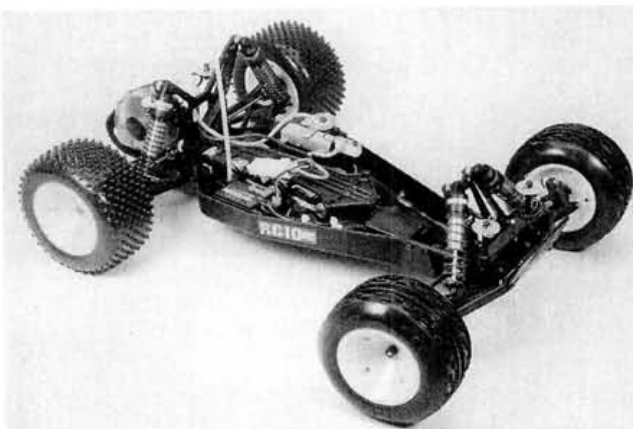
## CONCLUSION

With the Cyclone, Novak has packed an incredible number of features into an equally incredible small case. But before you to rush out and buy one, I advise you to consider that the Cyclone was designed for serious racing. If you're a novice or an intermediate-level driver, stick with what you have until your skills develop. The Cyclone's many features won't provide much benefit unless you know how to drive well and you're sensitive to small changes in your car's performance.

If you're a good driver, it's my opinion that the Cyclone can provide unsurpassed throttle *and* brake control on virtually any type of surface. With the optional software or programming box, you'll be able to custom-tailor the Cyclone's performance to exactly the way you like it. No other ESC can do this—period!

\*Addresses are listed alphabetically in the Index of Manufacturers on page 201. ■





## ASSOCIATED

### RC10T2 Sport Truck

In response to customers' requests, Associated now offers a new sport truck similar to its popular RC10T racing truck but based on its RC10T2 sport truck, no. 7011. The new RC10T2 features bushings, gold-anodized shocks, 3-piece wheels with multisurface tires, dogbones and stub axles, Associated's mechanical speed control and a stock motor with a complete wiring harness.

**Part no.—7012; price—\$305.**

Associated Electrics, 3585 Cadillac Ave., Costa Mesa, CA 92626; (714) 850-9342; fax (714) 850-1744.

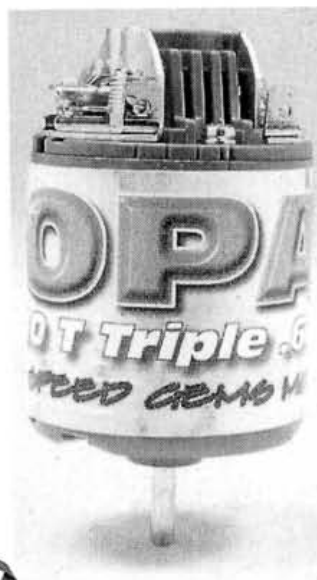
## HYPERFORMANCE PRODUCTS

### Pit Apron

This full-length apron features front pockets that will keep all your essential tools in easy reach—a necessity in the heat of a race. It comes in blue. One size fits all.

**Price—\$19.95.**

Hyperformance Products,  
5104 Melbourne  
Ave., Cypress, CA  
90630; (714)  
952-3530.



## TRINITY

### Opal Machine-Wound Modified Motor

This new Speed Gems motor is a 10-turn triple that produces 39,700rpm at 6 volts. Designed for oval racing, the motor features Trinity's new 5.1 version magnets, a 1.2mm-thick can and 4495 brushes. It also has adjustable timing.

**Part no.—RC 9208; price—\$49.99.**

Trinity Products, 1901 E. Linden Ave. #8, Linden, NJ 07036; (908) 862-1705; fax (908) 862-6875.



## KO PROPO

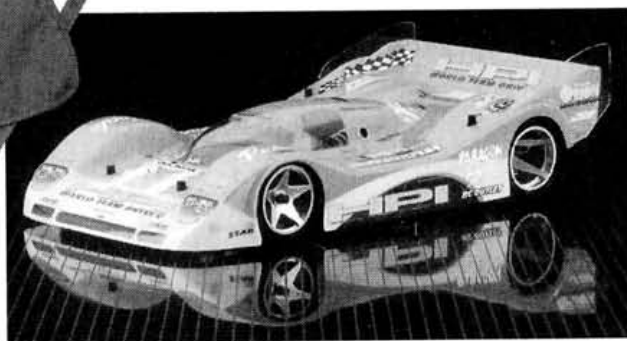
### High-Performance Servos

Made to deliver the speed and torque needed for all racing applications, these high-performance servos are available in 7.2 volts for electric models and 6 volts for nitro vehicles. They feature coreless motors, dual ball bearings and FET technology for greater power and precision. They come with industry-standard connectors.

They feature coreless motors, dual ball bearings and FET technology for greater power and precision. They come with industry-standard connectors.

**Part nos. and prices—KOPM1012 (FET high-speed servo, 7.2V), \$139.99; KOPM1013 (FET high-torque servo, 7.2V), \$149.99; KOPM1014 (FET high-speed servo, 6V), \$134.99; KOPM1016 (FET high-torque servo, 6V), \$149.99.**

KO Propo; distributed by Great Planes Model Distributors, 2904 Research Rd., Champaign, IL 61826-9021; (217) 398-6300; fax (217) 398-0008.



## HPI RACING

### NPT '92 Body

Modeled after the '92 IMSA racer, this body was designed to fit the smaller dimensions of a 1/10-scale car. It boasts an aerodynamic nose, low-profile cockpit and adjustable side plates. It comes with a full decal sheet.

**Part no.—7002; price—\$22.**

HPI Racing, 22600-C Lambert St., Ste. 904, El Toro, CA 92630; (714) 837-3250; fax (714) 837-3251.

## ANDY'S RACING PRODUCTS

### Soda Series Ram Gas Truck

Andy's, known for its specialized truck designs, now offers a body to fit Losi's GTX Champion truck chassis. Modeled on the winning truck from the Soda Series Circuit, the Ram was constructed with racing speed in mind. It comes in both unpainted and painted versions.

**Part no.—#3046; price—\$19.95 (unpainted); \$37.95 (painted).**

Andy's Racing Products, 2028 East Francis St., Ontario, CA 91761; (909) 923-6155; fax (909) 923-6156.





TAMIYA AMERICA

## Williams-Renault F1 Car

Made with the F1 fan in mind, this car is a replica of the ones driven by Damon Hill and Jacques Villeneuve on the most recent F1 circuit. Its chassis is based on the F103 but includes an adjustable friction-damping plate that is optional on the F103. The Williams-Renault front and rear spoilers are cut out of an entirely new mold and offer sufficient downforce to get this car going on any track.

**Part no.—FW18PN 58179; price—\$267.**

Tamiya America Inc., 2 Orion, Aliso Viejo, CA 92656-4200; (800) TAMIYA-A; fax (714) 362-6852.



TRX

## Pro-15 Engine

Designed for 1/10-scale off-road cars and trucks, this engine requires the same space and uses the same engine mounts as the TRX-12, but otherwise, it's a complete upgrade. It features a 20-percent-larger displacement, an oil groove to the piston, a high-compression combustion chamber, a big-bore carburetor and special high-performance porting to produce greater power than before. The TRX Pro-15 engine is available in four versions to fit most applications.

**Part nos.—4004 (short crank without pull-start for RC10GT, GTX and others); 4006 (long crank without pull-start for Nitro Hawk); 4007 (short crank with pull-start for RC10GT, GTX and others); 4009 (long crank with pull-start for Nitro Hawk); price—\$200 each.**

Traxxas Corp., 12150 Shiloh Rd., Dallas, TX 75228; (214) 613-3300; fax (214) 613-3599.



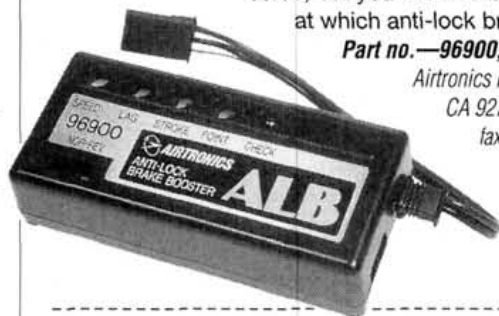
AIRTRONICS

## Anti-Lock Brake Booster

Designed for the gas racer who's tired of having locked brakes, this booster will enable you to enter corners faster yet still maintain control. Install it between your receiver and brake servo directly on the brake servo case. It offers a range of adjustments; not only will you be able to adjust the pumping speed of your brake servo, but you will also be able to adjust the point at which anti-lock braking begins.

**Part no.—96900; price—\$69.95.**

Airtronics Inc., 15311 Barranca Pky., Irvine, CA 92718; (714) 727-1474; fax (714) 727-1962.



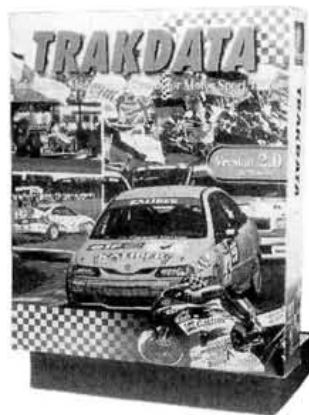
PLANET SOFTWARE

## TrakData Information Management System

This new data-tracking software will help racers organize circuit and event information in the heat of battle. Use the program's three sections to record everything from track details to car/chassis setup to race and championship schedules. The TrakData system requires an IBM or compatible PC (486DX, 33MHz or higher), Windows 3.1 (Windows 95 recommended), 8 megabytes RAM (16 for Windows 95) and 5 megabytes hard-disk space (10 recommended). It's also designed to allow access to the latest circuit information and manufacturers' recommended setups for winning performance.

**Price—\$79.**

Planet Software Ltd., P.O. Box 542, South Orange, NJ 07079; (800) 449-3038.



HITEC RCD

## Lynx Pistol-Grip Radio System

This 2-channel AM system offers servo-reversing, variable dual rate for steering-travel adjustment, quick-change dual-rate override switch for instant maximum steering, three LED battery-indicator lights and an ergonomic pistol-grip design. It includes Hitec's super narrowband HS2RMB receiver and two HS-303 servos. It's also available with a HS-303 servo and the company's SP-520PO reversible ESC.

**Part nos. and prices—121271 (27MHz without speed control), \$99.95; 121751 (75MHz without speed control), \$99.95; 121752 (with 1-way speed control), \$139.95; 121753 (with 2-way speed control), \$149.95.**

Hitec RCD Inc., 10729 Wheatlands Ave., Ste. C, Santee, CA 92071; (619) 258-4940; fax (619) 449-1002.



*Descriptions of the products shown here were taken from manufacturer and/or advertising agency press releases. The information given does not constitute an endorsement by Radio Control Car Action or guarantee product performance or safety. When contacting a manufacturer about any product described here, be sure to say you read about it in Radio Control Car Action. Manufacturers! To have your products mentioned here, send press releases to R/C Car Action, What's New, 100 East Ridge, Ridgefield, CT 06877-4606.*



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## TAMIYA MAZDA MIATA AND HONDA S800

(Continued from page 65)

Both the Miata and the Honda handled well on the "toothy" parking-lot surface. They both turned in quickly, and they pushed a tad when they exited corners. The longer wheelbase of the Miata gave it just a slight edge in stability, but I suspect that the Honda will get around a racetrack faster as long as you keep it pointed in the right direction. When I let off the throttle mid-turn, the cars became a little loose, but not enough to swap ends; Tamiya made a good choice in spec'ing the softer s-grip tires in the rear. Body roll was minimal, thanks, no doubt, to the low-slung chassis. The helper springs in the suspension arms kept both cars on the level through the turns, but bigger bumps taxed the meager shocks and sent the rear end bouncing into the air over cracks and frost heaves in the pavement. Because of this same problem, I upgraded my Mini Cooper M01 with more supple oil shocks, and the Miata and Honda will get the same treatment. This is strictly "getting the lowest lap time" stuff; if you just want to have fun, don't worry about it. The stock shocks do a fine job of taking the edge off bumps and protecting the chassis from big hits.

Speaking of big hits, watch the ground clearance. The Miata took a huge shot when I drove it across an uneven seam between slabs of pavement. Although the lip was less than 1/2 inch high, it might as well have been a parking block. The front bumper dug in, and the car went from full speed to full stop in a nanosecond. Miraculously, nothing broke. I can only imagine the stresses on the chassis at impact; rest assured, Tamiya builds 'em tough.

### FINAL THOUGHTS

It looks as though Tamiya has a couple more winners on its hands. They aren't full race vehicles, but the Mazda Miata and Honda S800 are definitely fun and easy to live with. These are cars you can run pack after pack through without thinking, "How's my diff? Gotta rebuild those shocks tonight. Need softer springs, maybe a sway-bar ..." and so on. To keep things interesting if you crave serious speed, plenty of hop-ups are available. As for me, I'm content with the stock performance, minus the shocks. Out of the box, the cars offer enough driving challenge and performance to keep things interesting, with beautiful scale bodies that make any schlub look like a master modeler with minimum effort. I strongly suggest that anyone who wants good, old-fashioned R/C fun try either of these cars as well as the others in the M-chassis line. You'll be M-pressed!

*\*Addresses are listed alphabetically in the Index of Manufacturers on page 201.*

### DILLON RACING

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## ROBOT WARS 3

(Continued from page 95)

### HINTS FOR ROBOT BUILDING

- Keep it simple. In all weight classes, wedge-shaped or plow-shaped robots did well. But there may be new rules about them this year.
- The controllers have to be able to handle stalled motors. A number of robots have burned up their wiring, motors, or controllers when they were stalled or pinned and were trying to get out. An electric motor has its greatest current draw at zero rpm.
- The best robots had no external antennas. This is done by concealing the antenna in an insulated hollow on the bottom of the vehicle. Enough of a signal gets into the antenna through a concrete or wooden floor for reliable operation.
- Don't use weapons that can disable your own robot. Some robots that let out spools of double-sided foam tape got stuck on their own trap. Another released a net, which can be very effective, but it ran over its own net and got tangled.
- Elaborate arms, blades and other protruding weapons often get locked in a "mortal embrace" with another robot. Once, mechanics had to go out and disassemble two robots to get them apart. Keep 'em clean in design.

### TACTICS

It was clear that many of the robot designers had spent so much time on design and construction that they had not practiced operating their beasts. Precise control is necessary to maneuver your robot to where its weapons can be effective and to use its weapons effectively. Most were operated by teams of two or more drivers, sometimes using custom control panels connected to standard R/C transmitters.

La Machine and Biohazard would not have done well if they hadn't been expertly handled. La Machine's charges would have been wasted if it had missed its targets!

A last tactic: make your robot cute or exotic-looking if this won't interfere with its functioning. In case of a close fight, the audience tends to vote for whatever looks weirdest.

### HOW TO CONTACT ROBOT WARS

The rules are going to change a bit this year, so you should contact Robot Wars if you're thinking about participating. If you're a robot builder, you are probably high-tech and will use email ([robotwars@aol.com](mailto:robotwars@aol.com)) or the web (<http://www.robotwars.com>) to get info.

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# Track Directory

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**Berry R/C Raceway**, Main St., Berry, AL 35543; Ronny or Don, (205) 932-3189

**Hobbytown USA Raceway**, 450-Q Schillinger Rd. N., Mobile, AL 36608; Rob & Karl Baker, (334) 633-8446

**Phoenix Raceway & Hobby**, 2006 Opelika Rd., Phenix City, AL 36867; Chris Watson, (334) 298-9786

**R/C Hi-Tech Raceway**, 3303 Meridian St., Huntsville, AL 35811; Rick Chambers, (205) 539-1347

**Lagoon Park R/C Raceway**, 2730 Lagoon Park Dr., Montgomery, AL 36109; Alex Love, (334) 272-6438

**Spring Cove Speedway**, Rt. 1, Box 95, Florence, AL 35630; Chuck or Lyda Syppitt, (205) 757-5998

**Sunbelt Hobby Center**, 2015 Memorial Pkwy., Huntsville, AL 35801; Chris Wilson, (205) 539-3191

**Thunder Road Speedway**, 108 Park Rd., Pleasant Grove, AL 35127; Jim or Cheyenne Kearney, (205) 744-0107

## ALASKA

**Alaska Indoor R/C Auto Raceway (AIRCAR)**, 600 Arctic Blvd., Anchorage, AK 99518; Josie Doyle, (907) 561-7733

**ARCORA**, 2812 Spenard Rd., Anchorage, AK 99503; Jim Rafuse, (907) 277-7778

**Fairbanks R/C Car Club**, 510 Jeanau Ave., Fairbanks, AK 99701; Dan Anderson, (907) 456-5494

## ARIZONA

**Cottonwood R/C**, S. 6th St., Cottonwood, AZ 86322; Sal Cirincione, (520) 567-6890

**Fast Line Hobbies**, 2141 S. Industrial Pk. Ave., Tempe, AZ 85282; Rob Zoller, (602) 966-8166

**Finish Line Raceway**, 7025 E. 21st St., Tucson, AZ 85710; Spoon-Brandon-R/C, (520) 747-3633

**Frank's Hobby House**, 19401 N. Cave Creek Rd., Phoenix, AZ 85024; Marty, (602) 992-3495

**G&S Raceway**, 967 Hancock, Bullhead City, AZ 86442; Bob Olsen, (520) 758-1100

**Havasu R/C Raceway**, 1400 S. Smoketree (Rotary Park), Lake Havasu, AZ 86403; Jeff Roe, (520) 855-2226

**High Desert Raceway**, 2570 Neal Ave., Kingman, AZ 86401; Bryce Cole, (520) 757-4498

**HobbyTown Mountain Raceway**, 1500 E. Cedar Ave., Cedar Hills Shopping Center, Flagstaff, AZ 86004; Richard, (520) 214-9887

**HobbyTown Raceway**, 9180 E. Indian Bend Rd., Scottsdale, AZ 85250; Dennis, (602) 948-3946

**HobbyTown Raceway**, 1915 East Baseline Rd., Gilbert, AZ 95234; Kenny, (602) 892-0405

**Hobbytown Raceway**, 2814 W. Bell Rd., Phoenix, AZ 85023; Mike Kaminski, (602) 993-0122

**Hobbytown Raceway**, 1102 E. 22nd St., Tucson, AZ 85704; Adam Crippen, (520) 882-8888

**Quarter Flash's Squirrelin' Dirt Raceway**, 16301 S. Santa Rita #C, Sahuarita, AZ 85629; Dave or Randy, (602) 625-9274

**R/C Sports Mania**, 3550 N. 35th Ave., Phoenix, AZ 85017; Brian Dick, (602) 278-3671

**Scottsdale R/C Raceway**, 3023 N. Scottsdale, Scottsdale, AZ 85251; Scott Anfinson, (602) 945-2186

**Speedway Hobbies**, 2710 N. Steve's Blvd., Suite #8, Flagstaff, AZ 86004; Gary McAllister, (602) 556-0710

**Thunder Mountain R/C**, 1325B Plaza Mavia, Sierra Vista, AZ 85635; Wayne Tuthill, (520) 459-4173

**Trax Raceway**, 401 E. Wilcox Dr., Sierra Vista, AZ 85635; Sam Schaler, (520) 452-9704

**USA Speedway**, 5947 W. Alameda, Glendale, AZ 85310; Michael Fleek, (602) 516-1398

## ARKANSAS

**A.R.C.C.A.**, 13703 Pleasant Hill Rd., Little Rock, AK 72209; Jim Kifer, (501) 455-2221

**Flyin' W R/C Raceway**, 957 B. Sunrise Ave., Springdale, AR 72762-3944; Brian or James Watkins, (501) 750-7716

**R/C Motorplex**, 204 Best Industry Dr., Jonesboro, AR 72401; David Hill or Kevin Brady, (501) 931-3278

**Superior Offroad R/C Club**, 2400 Bowman Rd., Little Rock, AR 72211; John Reynolds, (501) 778-7875

**Sparks R.C. Raceway**, 7194 Greene 721 Rd., Paragould, AR 72450; Tommy or Daniel Sparks, (501) 239-3606

## CALIFORNIA

**A-Main Racing**, 4309 North Cedar Ave., Fresno, CA 93776; Keith Gerhke, (209) 225-8001

**California City R/C Car Track**, 8349 Jacaranda Ave., California City, CA 93505; (619) 373-3765

**Cameron Park Raceway**, 1305 Cameron Ave., West Covina, CA 91790; Carl A. McVey, (818) 962-1120

**Cats West/Hawk's R/C Raceway**, 1201 West 10th St., Antioch, CA 94509; Jerry Winkelbaver, (510) 779-1665

**Chico's 20th Street Raceway**, 236A W. East Ave., Chico, CA 95926; David Brown, (916) 893-6443

**City Speedway**, 7750 Convoy Ct., San Diego, CA 92111; (619) 560-9633

**Cloverdale R/C Raceway**, 1 Citrus Fair Dr., Cloverdale, CA 95425; Bob Eulle, (707) 894-4468

**D&D Raceway**, 290 S. 1st Street, Turlock, CA 95380; Dave Miller or Lee Cisco, (209) 667-0907

**Freedom Park Raceway/Ventura Roadrunners**, Freedom Park Dr., Camarillo, CA 93010; Wayne Evans, (805) 656-RACE

**Gold Nugget Raceway**, 4650 Skyway, Paradise, CA 95969; Marvin's R/C Hobbies, (916) 877-7363

**Greater Los Angeles R/C Racing Club**, 3756 Cardiff Ave., #305, Los Angeles, CA 90034; Nikko Ko

**Hobby Central Raceway**, 34255 P.C.H., Unit 107, Dana Point, CA 92629; John, (714) 488-8095

**Hobby Paradise Raceway**, 1880 Art Gonzales Pkwy., Selma, CA 93662; Steve Keiser, (209) 896-4804

**Hobby Warehouse**, 5500 So. Watt, Sacramento, CA 95828; Roger Hubbard, (916) 381-7587

**Hot Rod Hobbies**, 25845 San Fernando Rd., #21, Saugus, CA 91350; Rod Weisbaum, (805) 255-2404

**Jake's Performance Hobbies**, 6650 Commerce Blvd., #21, Rohnert Park, CA 94928; Jake, (707) 586-3375

**JC High Desert Raceway**, Gorgonio Rd., Phelan, CA 92329; JC Fletcher, (619) 868-4834

**JD Hobbies**, 1009 W. College Ave., Santa Rosa, CA 95401; Mike, (707) 571-1700

**Just for Fun R/C Raceway**, 509 S. State Pk., Ukiah, CA 95482; Don, (707) 462-7305 days

**K&M R/C Raceway**, 22474 A Barton Rd., Grand Terrace, CA 92324; Mike Blake, (714) 783-0899

**KW Raceway**, 5630 Ager Rd., Montague, CA 96064; Keith Wilson, (916) 459-3787

**Lake Tahoe Raceway/Sierra Hobbies & Raceway**, PO Box 9969, South Lake Tahoe, CA 96158; Mark Oser or Greg Smith, (916) 541-4555

**Lodi's Radio Control Speedway**, 1033 Black Diamond, Ste. B, Lodi, CA 95240; Mike Belanger, (209) 334-5681

**Lucerne Valley Raceway**, 32800 Old Woman Springs Rd., #4, P.O. Box 2047, Lucerne Valley, CA 92356; Frank Rodrigue, (619) 248-7305

**M n M Hobbies**, 4225 Prado Rd., Suite 103, Corona, CA 91720; Joe Stanovich, (909) 272-3545

**Nor-Cal Mini-Speedway**, 519 Bush St., Woodland, CA 95695; Steve Van Atta, (916) 668-5678

**Perris Recreation R/C Track**, 120 N. Perris Blvd., Perris, CA 92370; (909) 943-6603

**R/C Racing Center and Hobbies**, 9842 Channel Rd., Lakeside, CA 92040 (San Diego County); Russ or Cindy Escalera, (619) 443-2270

**R/C Sports**, 759 E. Monte Vista Ave., Vacaville, CA 95688; (707) 446-5555

**Race Prep Raceway**, 20115 Nordhoff, Chatsworth, CA 91311; Steve Dunn, (818) 709-6800

**Rams 1/8-scale Gas**, Mission College, Lot B, 3000 Mission College Blvd., Santa Clara, CA 95054-1897; Ken Kimbrow, (408) 238-2089

**Ranch Pit Shop**, 1655 E. Mission Blvd., Pomona, CA 91766; Ken Shintani, (909) 823-1506

**RCRC Hobbies**, 2069 Pacific Coast Hwy., Lomita, CA 90717; Rhea & Cliff Fisher, (310) 530-7272

**Revelation Raceway**, 4871 State St., Montclair, CA 91762; Tim Bump, (909) 464-8247

**Rickey Racers**, 14568 Arrow Hwy., Fontana, CA 92335; (909) 822-0226

**Simi Valley Groundpounders**, 205 Tierra Rejada Rd. (behind Simi Valley Drive-In), Simi Valley, CA 93065; Jack Kastan, (805) 584-8211

**So. Cal R/C Raceway**, 11930 Valley View St., Garden Grove, CA 92645; Jim Blauvelt, (714) 892-0088

**SRS Raceway**, 915 N. Main St., Salinas, CA; (408) 424-4044

**Stockton Raceway**, 3133 N. Adart Rd., Stockton, CA 95215; Ultimate Hobbies, (209) 472-1991

**Team Air Racing Club**, 18208 Imperial Hwy., Yorba Linda, CA 92686; Don or Nicky, (714) 579-7488

**Track Heaven**, 6196 Child's Ave., San Diego, CA 92139; Loure, 475-2020



**Tri-Valley Auto Racers**, Livermore Elks Club, 940 Larkspur, Livermore, CA 94550; Roger Van Maren, (510) 449-0982

**Ultimate Hobbies**, 2143 N. Tunstun Ave. #6, Orange, CA 92665; Cliff Murukami, (714) 921-0424

**Valley R/C Racepark**, 146 S. Santa Fe St., Hemet, CA 92344; Valley Wide Recreation, (909) 654-1505 or 658-4322

**Wendy's Country Store and More/O.R.C.A. Racing Club**, 5475 Skyway, Paradise, CA 95969; Alan Evans, (916) 872-9363

## COLORADO

**MHOR R/C Speedway**, 15540 East Batavia Dr., Aurora, CO 80011; Jess Brockman, (303) 243-0151

**S&T R/C Raceway**, 323 Auburn Dr., Colorado Springs, CO 80909; Tim Bishop, (719) 574-2910

**Valley West R/C Club**, 2202 I Road, Grand Junction, CO 81505; Waymond Williams, (970) 242-8846

## CONNECTICUT

**E.A.R.T.H.**, 2380 Main St., Rocky Hill, CT 06067; Ziggy Kwasnicki, (860) 296-5418

**East Lyme R/C Kar Club**, Society Rd., East Lyme, CT 06333; Steve Brown, (860) 739-2911

**JP's R/C Hobbies**, 200 S. Main St., Seymour, CT 06483; Jim Petzold, (203) 888-4849

**K/N R/C Speedway Inc.**, West St., Stafford Springs, CT 06076; (203) 684-9896

**Little Bristol Speedway**, 302 Rt. 39, New Fairfield, CT 06776; Dale Cote, (203) 355-4028

**NERCAR**, 36 Glendale Rd., Enfield, CT 06082; Phil Olsson, (203) 627-5410

**R/C Madness**, 640 Enfield St., P.O. Box 64, Enfield, CT 06082; Christopher Marcy, (203) 741-6501

**Terryville Hobby**, 153 S. Riverside Ave., Pequabuck, CT 06781; Harry or Ray, (203) 584-5562

## DELAWARE

**Hobby Stop Speedway**, RD4, Box 100, Rte. 13, Seaford, DE 19973; Remy Haynes, Jr., (302) 629-3944

## FLORIDA

**B-T R/C Central**, 811 Playground Rd., Ft. Walton Beach, FL 32547; (904) 863-1666

**Branford R/C Speedway**, Rt. 3, Box 240, Branford, FL 32008; (904) 935-0758

**Broward County R/C Race Club**, Mills Pond Park, Ft. Lauderdale, FL; Ed Decembro, (305) 525-3304

**Challenger Sedway at the Willows**, Willows Park & Okeechobee Blvd., Royal Palm Beach, FL 33414; Walt (407) 965-2790, or Mark (407) 790-6917

**Coral Springs Roadrunners**, P.O. Box 9632, Coral Springs, FL 33075; Randy Witte, (305) 474-5934 or Rick Schwartz, (305) 344-1983

**First Coast Speedway**, 6410 Walther Dr., Jacksonville, FL 32211; Bob Thompson, (904) 743-2161

**5-Fifty-5 R/C Raceway**, State Road 555, Bartow, FL 33830; Chuck Nolke, (813) 324-7406

**Gainesville R/C Speedway**, PO Box 693, Melrose, FL 32666; 130 NW 14th, Ave., Gainesville, FL 32601; Bill Allard, (352) 475-2745

**Frontier Race Track**, 15260 N.E. 244th Ave., Salt Springs, FL 32134; Harold Reel and Don Combee, (352) 685-2881

**Greater Orlando Auto Racers**, 970 Keller Rd., Altamonte Springs, FL 32714; Dave Mottin, (407) 263-4819

**Hudson's R/C Raceway**, 590 Madeira St., St. Decembrine, FL 32095; Steve Hudson, (904) 826-4050

**Hobby World Raceway**, 7273 103rd St., Jacksonville, FL; Ray or Greg, (904) 772-9022

**Lehigh Acres R/C Speedway**, 1000 Lee Blvd., #203, Lehigh Acres, FL 33936; Jeff Grunow, (941) 369-8007

**Louie Burton's R/C Raceway**, 4215 Mustang Rd., Lakeland, FL 33803; Louie Burton, (813) 665-1322

**Miami R/C Raceway**, 12546 S.W. 88 St., Miami, FL 33101

**Morris Kohl's Raceway and Hobby Shop**, 1202 W. Waters Ave., Tampa, FL 33604; Morris Kohl, (813) 931-1626

**My Rose**, 1695 W. Indiantown Rd., Jupiter, FL 33458; Mark Watson, (407) 744-3800

**NORRA**, 3300 Santa Barbara Blvd., Naples, FL 33999; Jerry Pecar, (941) 455-9065 or Mark Benfield, (941) 263-6861

**Ocala Radio Control Car Club**, 3500 SE 30th Terrace, Ocala, FL 34471; Steve Shook, (904) 694-5147

**Paul's Stadium Raceway**, 4511 W. Dr. M.L. King Jr. Blvd., Tampa, FL 33614; Paul Surette, (813) 872-8662

**PBG R/C Motor Park**, 6351 Barbara St., Palm Beach Gardens, FL 33418; Doug Gleason, (407) 743-9791 or Tim Case, (407) 627-2608

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**R/C America**, 9274 Bird Road, Miami, FL 33165-4151; Dan Martinez, (305) 220-9359

**Red's R/C Raceway & Hobbies, Etc.**, 1010 Creighton Rd., Pensacola, FL 32504; Linda Tili, (904) 479-2330

**River City R/C Car Club**, 9711 Sharing Cross Dr., Jacksonville, FL 32257; Bill Fraden, (904) 268-1948

**Sarasota Fial Track**, 4900 Fruitville Rd., Sarasota, FL 34232; Jim Wilson, (941) 371-3689

**Southwest Florida R/C Raceway**, 2425 Rivers Rd., Naples, FL 33964; Clyde Armstrong, (813) 455-1143

**Superior Hobbies R/C Parking Lot Racing**, 430 E. Hwy. 436, Suite #106, Casselberry, FL 32707; Robbie Michael, (407) 834-9299

**Tampa Bay R/C Club**, P.O. Box 10224, St. Petersburg, FL 33733; Dick Gillette, (813) 526-0744

**Tampa Hobbytown R/C 4 Slot Car Raceway**, 15702 N. Dale Mabry, Tampa, FL 33618; Max and Judy Rosenroth, (813) 968-7233

**Three Flags R/C Racetrack**, 1755 East S.R. 44, Wildwood, FL 34785; Don Meares Sr., (904) 748-3870; fax (904) 748-5263

**Treasure Coast R/C Club**, 4931 Oleander, Fort Pierce, FL 34982; Lou, (407) 464-3207

**West Coast R/C Club**, Lake Park, 17203 N. Dale Mabry, Tampa, FL 33549; Alex, (813) 920-7448; Bert, (813) 654-2554

**Winterset Raceway**, US Rt. 27 South, Winterset Motel, Sebring, FL 33872; John Bisbee or Max Mike, (941) 699-1140 or (941) 385-4448

## GEORGIA

**A&S Hobbies & Raceway**, 3389 Cypress Mill Rd., Brunswick, GA 31520; Edward Davis, (912) 264-5489

**Dalton Raceway**, 2300 Chattahoochee Rd., Dalton, GA 30720; (404) 226-8699

**Dry Branch Raceway**, 3751 Gailu Dr., Dry Branch, GA 31020; David Stomper, (912) 477-0139; Brandon Mercer, (912) 746-7519

**Echeconnee Superspeedway**, 2149 Richardson Dr., Macon, GA 31206; Miami Thompson/Cliff Kline, (912) 788-8731

**Lake Mayer Raceway**, 1430 Dale Dr., Savannah, GA 31406; Pat Rossiter, (912) 354-0098

**The Racer's Edge**, 1530 Hwy. 19 N., Thomaston, GA 30286; Roger or Mark Walls, (706) 648-2637

**Ronnie's Hobbies**, 17050 Jimmy Carter Blvd., Norcross, GA 30092; Gregg Mundkowsky, (404) 246-0808

**Sandy Cross Speedway**, Rt. 1, Box 1071, Hwy 51, Royston, GA 30662; Morris Phillips or Wayne Fowler, (706) 245-8573

**SHILOH R/C Raceway**, 6362 Shiloh Rd., Hahira, GA 31632; Doug Burnett, (912) 794-2507

**Silver Wings Raceway**, 5611 Riverdale Rd., College Park, GA 30349; M. Bradshaw, (404) 991-2225

**Sugar Bowl R/C Speedway**, 5272 Nelson Brogdon Blvd., Sugar Hill, GA 30518; Shelley Bailey, (770) 945-6709

**Valdosta Hobbies**, 3998 Inner Perimeter Rd., Valdosta, GA 31602; Ron Hood, (912) 244-2101

## HAWAII

**Garden Isle R/C Racers**, 5855 Ahakea St., Kapaa, Kauai, HI 96746; Arnold Morales, (808) 823-0856

**Keel Lagoon Park**, Leeward Community College, Waipahu, HI 96797; (808) 676-5486

**Maul R/C Racing Association**, 430 Hokuahi St., #13, Wailuku, HI 96793; Tritch R/C/Hobbies/Radio Control Association, (808) 244-0528

**Radio Control Hawaii**, 474 Kalanikoa St., S-104, Hilo, HI 96720; Glenn Shiroma, (808) 935-5629

**Team PRC Racing Club**, 176 Mamo St., Hilo, HI 96720; Charlie Kawamoto, (808) 935-3561

## IDAHO

**Capital Dirt Burners**, 1200 S. Artesian #12, Eagle, ID 83616; Brian Fulkerson, (208) 939-4816

**River City Bandits**, 4867 N. Yellowstone, Idaho Falls, ID; Chris Hummer, (208) 523-9846

**Snake River R/C Raceway**, 265 Highway 50, Hansen, ID 83334; Jim Tattersall, (208) 423-5122

## ILLINOIS

**Ameri-Trac**, RR 3, Box 242, Mattoon, IL 61938; Ben or Judy Giles, (217) 235-6873

**AJ's Raceway & Hobby**, 10211 Keslinger Road, Dekalb, IL 60115; A.J. Schultz, (815) 756-2772

**BARR**, 809 River Dr., Byron, IL 61010; Jim Haynes, (815) 234-5615

**B.G. R/C Racing & Hobbies**, 56 E. Ferguson, Wood River, IL 62095; Ben or Judy Giles, (618) 254-6301

**C&R Hobbies**, 39 E. Jones, Milford, IL 60953; Ray Craighead, (815) 889-4073

**Cedarville R/C Speedway**, 430 W. Washington, Cedarville, IL 61013; Troy Pokol, (815) 745-2885

**Diehard R/C Raceway**, 300 N. Main, Kewanee, IL 61443; Dick Jennings, (309) 852-3700

**Hobby Town Raceway**, 4611 W. Rt. 120, McHenry, IL 60050; Mike Hollingsworth, (815) 344-1777

**Leisure Hours R/C Raceway**, 24121 W. Theodore, Bldg. 1, Plainfield, IL 60544; Scott Hill, (815) 439-1777 (track), (815) 439-1477 (shop)

**Machesney Park**, 1220 Shappert Dr., Machesney Park, IL 61115; (815) 282-1311

**Marty's R/C Hobby**, 1335 E. Broadway, Bradley, IL 60915; Gail or Marty, (815) 933-8441

**Miley Motor Speedway**, 1109 N. Bloomington St., Rte. 23, Streator, IL 61364; Doug, (815) 672-4212

**Monroe R/C Raceway**, 26049 Ridgeland Ave., Monroe, IL 60449; Roy or Roberta Moody, (708) 534-2422 (track), (708) 799-5597

**Pontoon Raceway**, 3670 St. Route 111, Granite City, IL 62040-4304; Pat or Skipp, (314) 691-3482 or (618) 931-1206

**R/C Workshop**, 3100 S.W. Adams St., Peoria, IL 61605; Al Kretz, (309) 673-4860

**Radio-Active Raceway**, 751 N. Bolingbrook Dr., #15, Bolingbrook, IL 60440; Jim, (630) 759-7557

**Rector's R/C Raceway**, R.R. 3, Box 104, Albion, IL 62806; Tim Wolfe, (618) 842-9379 (M-F), (618) 446-3251 (Sun.)

**Shiloh Eagles Superspeedway**, 308 N. Virginia Ave., Belleville, IL 62220; (618) 277-6030

**SIRCAR Raceway**, 1200 N. Marion, Carbondale, IL 62901; (618) 549-5885

**Stanton Hobby Shop Inc.**, 4718 N. Milwaukee, Chicago, IL 60630; Tim Copeland, (312) 283-6446

**Superior Raceway**, 1706 W. Bradley, Champaign, IL 61821; (217) 359-8073

**Valley Farms R/C Raceway**, 706 Bypass 20, Cherry Valley, IL 61016; Dean or Debbie, (815) 332-4516 or (815) 547-5984

**Wayne's World Raceway**, R.R. 1 Box 246A, Danville, IL 61832; Wayne Henk, (217) 446-3419

## INDIANA

**Autograph/Race World**, 231 Pendleton Ave., Pendleton, IN 46064; Sam Mudd, (317) 778-3386

**Bremen Racing Ent.**, 308 N. Bowen, Bremen, IN 46506; Dale Heuberger, (219) 546-3807

**Dave's ATVs, Hobbies & Raceway**, 3035 English Ave., Indianapolis, IN 46201; Dave Sutton, (317) 767-9641

**Elliott's R/C Raceway**, 2140 North Plate, Kokomo, IN 46901; (317) 452-0163

**G.R.C.C.C. Inc.**, 1651 W. Franklin St., Elkhart, IN 46516; Pete Russell, (219) 293-1827

**Hardesty R/C Raceway**, 11 East Plymouth St., Hamlet, IN 4653; Max Hardesty, (219) 867-8600

**Hobby Barn Raceway**, 1950 Springhill, Terre Haute, IN 47802-9694; (812) 299-5773

**Joe's Hobby**, 1950 E. Springhill Dr., Terre Haute, IN 47802; Joe Buck, (812) 299-5773

**K&L Hobbies & Raceway**, 3275 North 525W, LaPorte, IN 46350; (219) 324-0353

**Kokomo Hobby & Radio Raceway**, 1108 E. Markland, Kokomo, IN 46901; (317) 457-5060

**P&T Hobbies and Raceway**, RR 2 (Hwy. 60), Mitchell, IN 47446; Paul Weber or Tom Logsdon, (812) 849-6666, e-mail pnhobby@ix.netcom.com

**RC Barn**, 310 N 125 W, Monroe, IN 46772; Mark Lengerich, (219) 692-6600

**R.C.R.C. Raceway of Salina**, 1300 E. Crawford, Bill Burke Park, Salina, KS 67401; Calvin Calp, (913) 823-9588

**R/C World of Indiana**, RR #2, Box 335, Lynn, IN 47355; (317) 874-2464

**Rimfire Raceway and Hobby Shop**, 8 Wood Ct., Hebron, IN 46341; Sandra Eaton, (219) 996-6288 (shop), 987-2803 (home)

**The Rink**, 7900 Whitcomb, Merrillville, IN 46410; Don Reiner, (219) 769-8113

**Rod's Off-Road R/C Track**, 800 N. Division, Bristol, IN 46507; Rod Harm, (219) 848-7848

## IOWA

**Delb's Speedway**, 423 11th Ave. So., Clinton, IA; Rusti's Hobbies, (319) 243-2697

**Dubuque R/C Speedway**, Dubuque County Fairgrounds, Dubuque, IA 52001; Paul Conlon, (319) 556-2736

**Hobby Haven**, 7672 Hickman Rd., Des Moines, IA 50322; Jim, (515) 276-8785

**Inside Challenge**, 2028 Main St., Keokuk, IA 52632; Dan Hodges, (319) 524-2225

**IROAR-Hawkeye Downs Raceway**, Hawkeye Downs, 6th Street S.W., Cedar Rapids, IA 52404; Dave Kleinschrodt, (319) 556-8524



# Track Directory

**K.A.R.S. Raceway**, Tolmie Park, 2956 Plank Rd., Keokuk, IA 52632; Lavinia or Mike Steenberg, (319) 524-7259  
**OC**

**Manly R/C Club**, Box 23 (Hwy 65), Manly, IA 50456; Bruce Hill, (515) 454-2025  
**OC**

**Marble's Raceway**, 4685 SE 40 St., Des Moines, IA 50317; Rick Marble, (515) 262-7507  
**OC**

**Mr. Car Raceway**, P.O. Box 1112, Central Iowa Fairgrounds, Marshalltown, IA 50158; Jim Gossett, (515) 483-2234  
**OC**

**Outback Speedway**, 403 State St., Guthrie Center, IA 50155; Helens Enterprises, (515) 747-3064  
**OC**

**Radio Control Raceway Park**, 746 South 30th St., Fort Dodge, IA 50501; Bernie Halverson, (515) 576-3780  
**OC**

**Riverside Raceway**, Veteran's park, Algona, IA 50511; Mike Beisch, (515) 296-9352  
**OC**

**Shentona Speedway**, 1215 W. Lowell, Shenandoah, IA 51601; Bob Cross, (712) 246-5984  
**OC**

**Wild Bill's Raceway**, 901 W. Jones, Knoxville, IA 50138; William Anderson, JR., (515) 842-5973  
**OC**

## KANSAS

**Hobbytown USA**, 2016 W. 23rd, Lawrence, KS 66046; Kevin Decembar, (913) 865-0883  
**OC**

**Mike's R/C Hobbies**, 121 SE 29th Street, Unit #3, Topeka, KS 66605; Mike Barnard, (913) 266-8580  
**OC**

**M&M R/C Superspeedway**, 2400 Broadway, Parsons, KS 67357; Mark and Melissa Brown, (316) 421-6742 or (316) 421-5006  
**OC**

**Ottawa Outlaw Raceway**, 412 South Main, Ottawa, KS 66067; Tom Wilson, (913) 242-1450  
**OC**

**R/C Superspeedway & TQ Pro Shop**, 14 E. Ave "A", Hutchinson, KS 67501; Joe Jandrakovic, (313) 665-6633  
**OC**

**R/C World Raceway**, 217 Brownie Ave., Scranton, KS 66537; John and Kyle, (913) 793-2313  
**OC**

**RCRC Raceway**, 507 N. 4th, Atwood, KS 67730; Bob Dunker, (913) 626-3261  
**OC**

## KENTUCKY

**Dixon's R/C Raceway**, RR2, Box 505, Hazard, KY 41701; Jeff Dixon, (606) 436-1902 or (606) 436-9559  
**OC**

**Johnny's Speedway**, 3114 North Street, LLOYD, Greenup, KY 41144; Charles, (606) 473-0075  
**OC**

**Pit Stop Hobbies**, 106 A Street, Benton, KY 42025; Robert Fitzgerald, (502) 527-8216  
**OC**

**ProTrak R/C Racing**, 3451 Cane Run Rd., Louisville, KY 40211; Tony Hardin, (502) 778-2657  
**OC**

**Terry's R/C Hobbies**, 691 Garner Ave., West Liberty, KY 41472; Terry McGuire, (606) 743-2126  
**OC**

**Trlo Hobbies & R/C**, 1027 N. Wilson Rd., Radcliff, KY 40160; Maurice Johnson, (502) 351-7547  
**OC**

**West Kentucky R/C Hobbies**, 45 Hawkins Loop, P.O. Box 21, Symsonia, KY 42082; (502) 851-3534  
**OC**

## LOUISIANA

**Al's Auto R/C Store**, 1529 Anitassat, Sulphur, LA 70663-6131; Al Gaspard, (318) 625-5880 or (318) 437-8545  
**OC**

**Cajun R/C Raceway**, 728 Perry Lane, Opel, LA 70570; (504) 948-6350  
**OC**

**Indy Speedway & Hobby**, 3753 General DeGaulle Dr., New Orleans, LA 70131; Vince Sheetz, (504) 367-1891  
**OC**

**Pontchartrain Hobby Shop**, 3755 Pontchartrain Dr., Slidell, LA 70458; (504) 649-1199  
**OC**

**Red River R/C Racers**, 3203 Old Shed, Bossier City, LA 71111; David Gray, (318) 747-1863  
**OC**

**T&M Pro Hobbies**, 9212 W. Judge Perez Dr., Chalmette, LA 70043; Tom/Melodie Barthel, (504) 271-3111  
**OC**

## MAINE

**Clay Bowl R/C Hobbies**, P.O. Box 61, Greene, ME 04236; Pat Cap, (207) 946-5003  
**OC**

**Mementos Hobby Shop**, 86 Sweden St., Caribou, ME 04736; (207) 498-3711  
**OC**

**R/C Speedway & Hobbies**, 87 Main St., Fairfield, ME 04963; David Prescott, (207) 453-4588  
**OC**

## MARYLAND

**Cockeysville AstroDome Racers**, 10854 York Rd. (rear), Cockeysville, MD 21030; Steve Balaz, (410) 666-2521  
**OC**

**Doug's Raceway**, 2935 Crain Hwy., Waldorf, MD 20601; Doug Moran, Jr., (301) 843-8220  
**OC**

**Hobby Town USA**, 8223-11 Elliot Rd., Easton, MD 21601; Bill Dyke, (410) 820-9308  
**OC**

**Hobby Hut**, 7014 B. German Hill, Dundalk, MD 21224; Joe Lamb, (410) 288-5662  
**OC**

**J.R.'s Race Place**, 2935 Crain Hwy., Waldorf, MD 20601; James Radford, (410) 947-2766  
**OC**

**Outback R/C Race Club**, Maiden La., Manchester, MD 21102; Randy or Bonnie Henry, (410) 848-4350  
**OC**

**The Track**, 16806 Oakmont Ave., Gaithersburg, MD 20877; Mimi Wong, (301) 417-9630  
**OC**

## MASSACHUSETTS

**C&C Hobby & Raceway**, 562 Russells Mills Rd., So. Dartmouth, MA 02748; Charlie, (508) 997-4131  
**OC**

**Hi-Tech Hobbies**, 1681 Broadway (Rt. 138), Raynham, MA 02767; Ruben, (508) 880-5373  
**OC**

**Megaworld Raceway**, Rt. 8, Curran Hwy., North Adams, MA 01247; Bob Blanchette, (413) 743-7223  
**OC**

**New England R/C Headquarters**, 33 Fr. Devalles Blvd., Fall River, MA 02721; Chuck Gregory, (508) 673-6069  
**OC**

**West Street Hobbies**, 114C Main St., Medway, MA 02053; Jim, (508) 533-1231  
**OC**

## MICHIGAN

**Akright Outback Racing**, 984 Zimmer Rd., Williamston, MI 48895; Steve Akright, (517) 655-4531  
**OC**

**Capital Area Racing Society**, The Plumbers Hall, 5405 S. Logan, Lansing, MI; Dave Halsey or Brad Smith, (517) 646-8224 or (517) 484-4028  
**OC**

**Down River R/C Association/Riders**, 1519 Oak St., Wyandotte, MI 48192; Dave McCaslin, (313) 287-7405 or (313) 284-1560  
**OC**

**Freedom Hill R/C Raceway**, 29330 Coolidge, Roseville, MI 48066; Curley Grewe, (810) 776-5483  
**OC**

**Larry's Performance R/C's**, 43665 Utica Rd., Sterling Heights, MI 48310; Larry, (810) 997-4840  
**OC**

**Ludington R/C Raceway**, 1483 N. Dennis Rd., Ludington, MI 49431; (616) 843-4654  
**OC**

**MCRC Raceway**, 4601 Page Ave., Michigan Center, MI 49203; Sam Sprang, (517) 787-9161  
**OC**

**M&W R/C Speedway**, 16199 Common Rd., Roseville, MI 48066; Wilson Tang, (810) 771-3322  
**OC**

**N.W. Michigan R/C Club**, 744 Munson Ave., Traverse City, MI 49686; Jim Ovaatt, (616) 947-6670  
**OC**

**Newberry R/C Raceway**, RR 3 Box 2860, McMillan, MI 49853; Dustin Hart, (906) 293-3044  
**OC**

**R&L Hobbies & Racing**, 9782 Portage Rd., Portage, MI 49002; Rex Simpson, (616) 323-3686; fax (616) 329-1744  
**OC**

**Rainbow Gardens**, 600 North Shore Ave., Crystal, MI 48818; Mike or Sandy, (517) 235-4298  
**OC**

**USA Raceways**, 6083 Dixie Hwy., Bridgeport, MI 48722; Dave Killingsworth, (517) 777-7USA  
**OC**

**Vicksburg Off-Road R/C Raceway**, 50201 Silver St., Vicksburg, MI 49097; Jeff Schroeder, (616) 375-8591  
**OC**

**Village Hobbies-n-Crafts**, 195 N. Elm, Hesperia, MI 49421; Alan or Fran, (616) 854-1374  
**OC**

**W.A.R.R.**, 1025 Gilmore Ave., Winona, MI 55987; Patrick Smith, (507) 452-6732  
**OC**

**West Michigan R/C Racers Club**, 814 E. Railroad St., Hastings, MI 49058; Doug, (616) 948-2287 or Pat, (616) 945-3873  
**OC**

**Westside R/C Raceway**, 4335 Lake Michigan Dr., Grand Rapids, MI 49504; George Orlikowski, (616) 791-9902  
**OC**

## MINNESOTA

**Badger R/C Raceway**, 404 Tamarack St., Box 101, Badger, MN 56714; Keith Cumming, (218) 386-2001  
**OC**

**Duey's Hobbies & R/C Raceway**, 6600 Cahill Ave., Inver Grove Heights, MN 55076; Duey Carlson, (612) 450-1721  
**OC**

**Grand Rapids R/C Speedway**, 2209 Hwy 2 East, Grand Rapids, MN 55744; Aaron Vopes, (218) 326-6751  
**OC**

**Greater Minnesota Racin' Place**, 3302 Southway Dr., St. Cloud, MN 56301; Jon Jackson, (218) 252-9768  
**OC**

**Hyperspeed Indoor**, 410 2nd St. NE, Milaca, MN 56353; Randy Reiman, (612) 983-6329  
**OC**

**J's R/C Raceways**, Rte. 2, Box 266, Starbuck, MN 56381; Jay Campbell, (320) 239-4827  
**OC**

**Larry's Raceway Park**, 105 3rd Ave. NE, Glenwood, MN 56334; Dan Winter, (612) 634-5246  
**OC**

**Min-E-Golf & Hobby**, 9100 Park Ave., Elk River, MN 55330; (612) 441-8365  
**OC**

**Paul Bunyan Raceway**, Rte. 1, Box 468, Bemidji, MN 56664; Brad Trask, (218) 243-2749  
**OC**

**R/C Racing World**, 235 Main Ave., North, Harmony, MN 55939; Mark McKay, (507) 886-5931 or (507) 886-2224  
**OC**

**Southside Speedway**, 2241 Marion Rd. SE, Rochester, MN 55904; Kevin Guy, (507) 281-3233  
**OC**

**Trackside Racing**, 443 8th Ave. NW, New Brighton, MN 55112; Winton Offelle, (612) 633-2112  
**OC**

**Wild West R/C Speedway**, 2822 Piedmont Ave., Duluth, MN 55811; Roger Deloach, (218) 727-6248  
**OC**

## MISSISSIPPI

**Fast Freddy's Raceway**, 20390 Hwy. 49, Saucier, MS 39574; Mark Payne, (601) 832-0315  
**OC**

**Joe McFadden Hobbies**, 1619 51st Ave., Meridian, MS 39307; Joe McFadden, (601) 483-7000  
**OC**

**Rural Hill Raceway**, 2535 Tabernacle Rd., Columbus, MS 39702; Jeffrey Alvey, (601) 328-9429  
**OC**

**Small Cars Unlimited**, 820 Cooper Rd., Jackson, MS 39212; (601) 372-FAST  
**OC**

## MISSOURI

**All Seasons Hobby**, 152 O'Fallon Plaza, O'Fallon, MO 63366; Bob Daniels, (314) 281-8767  
**OC**

**B&L Hobbies & Raceway**, 2800 Anchor Dr., Park Hills, MO 63061; Bob Marler, (314) 431-9444  
**OC**

**Blue Vue Speedway**, 12019 E. 47th St., Kansas City, MO 64133; Mark Randol, (816) 358-0238  
**OC**

**Columbia R/C Trax**, 1502 W. Bus Loop 70 (Exit 125), Columbia, MO 65202; Gary Phillippe, (314) 582-3993  
**OC**

**Fire Mountain Raceway**, 8647 Commercial Blvd., Pevely, MO 63070; Dan Gordon, (314) 475-6449  
**OC**

**Greentree R/C Raceway**, St. Louis Dirt Burners R/C Club, Marshall Rd., Kirkwood, MO; (314) 831-2194  
**OC**

**Hobbies 'n Stuff Raceway**, 102 West Pearce Blvd., Wentzville, MO; Tim Satchwill, (314) 327-6006  
**OC**

**Mid-Mo R/C Raceway**, 400 W. 2nd., Sedalia, MO 65301; (816) 826-5113  
**OC**

**Ozarks R/C Raceway**, Hwy 13, Brighton, MO 65781; Gene Rhodes or Ron Hawkins, (417) 742-4376 or (417) 742-2561  
**OC**

**Real R/C Raceway**, 24204 State Rt. 58, Pleasant Hill, MO 64080; Steve Hale, (816) 540-5594  
**OC**

**Suppenbach Winter Racing**, Route 5, Box 66, Pleasant Hill, MO 64080; Larry Suppenbach, (816) 987-5828  
**OC**

## MONTANA

**Stormer Raceway & Slot Motorplex**, P.O. Box 126 Hwy 2 East, Glasgow, MT 59230; (406) 228-4569  
**OC**

**Thunder Road Racetrack**, 110-E Centennial Dr., Livingston, MT 59047; Dominic Papa, (406) 222-1352  
**OC**

## NEBRASKA

**Goodyear Superspeedway and Off-Road**, 4021 North 56th, Lincoln, NE 68510; Tom or Bob, (402) 464-5000  
**OC**

**Mr. Bill's**, 450 West 2nd St., Hastings, NE 68901; Bill J. Ries, (402) 462-4865  
**OC**

**Salvation Army South Corps**, 4032 Harrison St., Omaha, NE 68164; James Frye, (402) 734-3414; fax (402) 734-3415  
**OC**

**Wild Card Raceway**, RR1 Box 137, Columbus, NE 68601; Roger F. Miller, (402) 564-7743  
**OC**

**Winners' Circle**, 3368 N. 88th Plaza, Omaha, NE 68164; Robert Conner, (402) 571-1821  
**OC**

## NEVADA

**Dansey's Indoor R/C & Hobbies**, 741 N. Nellis, Las Vegas, NV; David Lugo, (702) 453-RACE  
**OC**

**Silverbowl Speedway**, 7274 Hardtrack Cir., Las Vegas, NV 89119; Mike, (702) 896-3577  
**OC**

**Western R/C Raceway**, 6404 Richmar, Las Vegas, NV 89139; Randy Grigg, (702) 897-7227  
**OC**

## NEW HAMPSHIRE

**Axis Racing R/C Dragway**, 4197 High St., Hampton, NH; Dan Peterson, (603) 926-5211  
**OC**

**Economy R/C Speedway**, 4 Maple St., Winchester, NH 03470; Harold Thomas, (603) 239-4482 or 239-6470  
**OC**

**Fastracker Club**, 520 Washington St., Keene, NH 03431; Bill Phillips or John O'Connor, (603) 357-8393  
**OC**

**Open Season Sports Center**, Rt. 302, Lisbon Rd., Lisbon, NH 03585; Joseph Wignett, (603) 838-6602  
**OC**

**Outback Raceway**, East Washington Rd., P.O. Box 508, Bradford, NH 03221; Jim or Bill Thompson, (603) 938-2425  
**OC**

**Robert's Railroad and Hobbies**, 1335 1st NH Turnpike, Rte 4, Northwood, NH 03261; Robert Jeffers, (603) 942-5193  
**OC**

**RT 106 Racepark**, 743 Clough Mill Rd., Pembroke, NH 03275; Douglas Graves, (603) 224-RACE  
**OC**


## NEW JERSEY

**America's Hobby Center Inc.**, 18300 Tonnelle Ave., North Bergen, NJ 07047; John Many, (201) 662-0777  
**OC**


**Ray's American Raceway**, 142 Wilson Ave., Englishtown, NJ 07726; Ray Whitehead, (908) 446-3737  
**OC**





# Track Directory


**Family Hobbies Raceway**, 3576 N.W. Blvd. & Weymouth Rd., Vineland, NJ 08360; Linda Vogel, (609) 696-5790  



**Golden Hobbies Raceway**, 415 Erial Rd., Pine Hill, NJ 08021; John or Iona Golden, (609) 782-1222  



**Jefferson Speedway**, 5494 Berkshire Valley Rd., Oak Ridge, NJ 07438; (201) 697-7525  



**Jerry's Hobby Center & Raceway**, 336 Rt. 22W, Greenbrook, NJ 08812; Jerry or Gary, (908) 752-6030  



**LBRA Track**, 392 Warburton Pl., Long Golden, NJ 07740; (908) 222-5122  


**Millville R/C Oval**, 114 N. High St., Millville, NJ 08332; William Denstoz, (609) 327-4640  


**Pit Stop Dragway**, Campus Rd., Totowa, NJ 07512; Kimberly Frank, (201) 956-RACE (7223)  


**The Race Place**, 1151 Hwy. 33, Farmingdale, NJ 07731; John Fary, (908) 938-5215  



**On Trax Hobbies**, 1549 Rte. 70, Browns Mills, NJ 08015; Joseph DiGirolamo, (609) 735-0422  


**Zeppelin Hobbies**, 92 Rt. 23N, Riverdale, NJ 07457; Lou Ballini, (201) 831-7717  


## NEW MEXICO

**Meerscheidt R/C Raceway Park**, Walnut and Hadley, Meerscheidt Park, Las Cruces, NM 88001; Wayne Ward, 2230 Coleen Ct., (505) 523-4863 or (505) 526-1758  



## NEW YORK

**BarnStormers**, MD #1 Old Oxford Rd., Chester, NY 10918; Lou, (914) 469-8206  


**Beach Hill Speedway**, 1760 Beach Hill Rd., Watkins Glen, NY 14891; Jim Riley, (607) 535-2616  


**Brian's Off-Road Track**, 1124 N. Forest, Williamsville, NY 14221; Brian Was, (716) 633-8155  



**Brockport Speedway**, 6000 Sweden Walker Rd., Brockport, NY 14420; Gil & Betty Glidden, (716) 637-6224  



**Brownie's Pro & Sport Hobbies**, 124 Bennett St., Staten Island, NY 10302-1426; John Brown, (718) 727-2194  



**BSK Hobbies & Raceway**, 120 Main St., Hornel, NY 14843; Bruce, (607) 424-0111, (800) 603-0197.  



**C&D Raceway**, 12542 NYS Rte. 12E, Chaumont, NY 13622; Chris or Don Bourquin, (315) 649-5403  



**Capital District R/C Racers**, 27 Venus Dr., Albany, NY 12205; Keith Green, (518) 783-7859  



**Central New York R/C Auto Racers**, Martin St., P.O. Box 116, Rome, NY 13440; John Orr, (315) 336-5140  


**Chipmunk Hill R/C Speedway**, 217 Pine St., Theresa, NY 13691; Ted or Pete House, (315) 628-5065  


**Hal's Hobby Shop**, 120 Cayuga St., Fulton, NY 13069; Hal & April Halstead, (315) 598-2772  



**Hobby Images R/C Raceway**, 89 Jerusalem Ave., Hicksville, NY 11801; Chris LaRussa, (516) 822-8259  


**Jerry's Raceway**, 111 S. Applegate Rd., Ithaca, NY 14850; Jerry and Lori Achilles, (607) 277-0940  



**LI 1/4 Scale Racers**, 63 Horton Dr., Huntington Station, NY 11746; (516) 351-5384  


**Long Island Raceway**, 168 Broad Hollow, Farmingdale, NY 11735; Jane, (516) 845-7223  



**The Model Shop**, 1 Lakewood Ave., Monticello, NY 12701; Richard Ciminoti, (914) 791-6075  


**Mountain Raceway**, Budd Rd., Phillipsport, NY; Joe Colombo, (914) 647-1121  



**National Hobby Supply**, 251/2 Webb Rd., Middletown, NY 10940; Bruce Roosa, (914) 342-6786  


**N.Y. R/C Raceway**, 300 W. 55th St., New York, NY 10019; Jack Zelter, (212) 956-7296  



**Performance Plus Radio Control Speedway The Hobby House**, 1141 1/2 Jones & Gifford Ave., Jamestown, NY 14701; (716) 488-1772  



**P.R.O. Speedway**, 5 Washington St., Cattaraugus, NY 14719; Marc Pritchard, (716) 257-3101  


**R/C Competition Corner**, 2413 Brewerton Rd., Matysdale, NY 13211; Lor Cirinello, (315) 455-8718  



**R/C Hobbies**, Rt. 49, Box 138, Constantia, NY 13044; Roy Catholici, (315) 623-9536  



**R/C Sport Hobby**, 69-57 Juniper Blvd., South, Middle Village, NY 11379  


**R&S Hobbies**, 356 Macedon Ct. Rd., Fairport, NY 14502; (716) 425-3722  


**Rampage R/C**, 27 Fuller Ln., Hyde Park, NY; Brian Walker, (914) 229-2456  


**Ringwood Junction**, 1922 Dryden Rd., Freeville, NY 13068; Steve Miller, (607) 347-4198  



**Schoharie Co. R/C Car Club**, P.O. Box 126, Cobleskill, NY 12043; (518) 234-4600  


**Small Torque Racers of Long Island**, 13 Melony Ave., Plainview, NY 11803; Thomas Bolger, (516) 938-9005  



**Southern Tier Raceway**, 88 Paige St., Oswego, NY 13827; Anita Harding, (607) 687-5395  


**South Shore Hobby & Raceway**, W. Roe Blvd., Patchogue, NY 11772; Don Hauck, (516) 758-5567  



**Speedworld R/C & Hobby**, P.O. Box 482, Chenango Bridge, NY 13745; Michael Magnusson, (607) 648-2063  



**Tri County Remote Control Car Club**, 33 West Decker St., Johnstown, NY 12095; Jim Sprouse, (518) 762-8884  


**Ulster County Speedway**, P.O. Box 71, New Paltz, NY 12561; Joe Colombo Jr., (914) 754-7664  



**Walt's Hobby**, 2 Dwight Park Dr., Syracuse, NY 13209; (315) 453-2291  



**Westfield R.C. Speedway**, 27 Clark St., Westfield, NY 14787; John or Jared Lindstrom, (716) 326-2339  



**Whitestone**, 30-56 Whitestone Expy. (Dept. of Motor Vehicles), Flushing, NY 11374; Rudolf Ardilla, (718) 966-6155  


**ZDAR Road Speedway**, 15318 Armes Ct., Gowanda, NY 14070; David & Gordon Ackler, (716) 532-9463  


## NORTH CAROLINA

**A&J R/C Models**, 2051 Anthony Rd., Burlington, NC 27215; Jerry Loye or Andrea Thompson, (910) 227-4556; fax (910) 227-1001  


**The Antique Barn**, 2810 Forest Hills Rd., Wilson, NC 27893; Steve Seidlinger, (919) 237-6778  



**Badin Shore Raceway**, 1730 Jackson Lake Rd., High Point, NC 27263; Jimmy or Tim Martin, (910) 431-6407  



**C/C Hobby Speedway**, 8358 U.S. Hwy. 220 Bus. N., Randleman, NC 27317; Steve & Mary Cox, (910) 495-3482  



**C&H Raceway**, 1400 N. Cannon Blvd., Kannapolis, NC 28083; Camera & Hobby Shop, (704) 933-5321  



**Cape Fear Speedway**, 207 Harley Rd., Wilmington, NC 28401; Bob Justice, (910) 452-2354  


**Carolina Dragway**, 907-D Warsaw Rd., Clinton, NC 28328; (910) 592-4569  



**Carolina Hobbies R/C Raceway**, Route 1, Box 158, Taylorsville, NC 28681; Kim & Roseanne Kulawik, (704) 495-4040  


**Carolina Motorsports**, 1517 Blandwood Dr., High Point, NC 27360; (910) 885-3713  


**Clapp's R/C Motor Speedway**, Rt. 4, Box 300A, Siler City, NC 27344; Al Clapp, (919) 663-3198  


**Clinton R/C Raceway**, 907-C Warsaw Rd., Clinton, NC 28328; Corbett Marshburn, (919) 592-9489  



**Hobby Club R/C Raceway**, 1241 Buck Jones Rd., Raleigh, NC 27606; Hobby Club, (919) 460-8838  


**King R/C**, P.O. Box 897, Five Forks Village, King, NC 27021; Chris Smith, (910) 983-3969  


**King Super Speedway**, 143 Industrial Dr., P.O. Box 897, King, NC 27021; Chris Smith, (910) 983-5598 or (910) 883-3969  



**Mine Hole Gap R/C Raceway**, 1297 Charlotte Hwy., Asheville, NC 28730; Steve Shultz, (704) 628-3020  


**Ride & Slide R/C Raceway**, 5319 Yacklin Rd., Fayetteville, NC 28303; Jim Woodman, (910) 425-5276 or Bill Culbertson, (910) 867-4202  



**R&J Off-Road Racing**, 6172 Blalock Rd., Lucama, NC 27851; Robert Williams, (919) 239-0853; Jonathan Jenkins, (919) 746-2703  


**R.J.S. R/C Parkway**, Rt. 9, Box 651, Fay, NC 28301; Tony Starling, (910) 486-4820  



**Rosewood R/C Speedway**, 651 Community Dr., Goldsboro, NC 27530; Glenn Elam, (919) 731-4734  



**S&B Speedway & Hobbies**, Rt. 1, Box 311A, Farmville, NC 27828; Ricky Strickland, (919) 753-4422  


**Sandhills Raceway Inc.**, US #1 South, Aberdeen, NC 28315; (919) 944-7414  



**Ultratrac**, 5505 Palmers Branch, Leland, NC 28451; Mike Williams, (910) 313-0350  


## NORTH DAKOTA


**Hacienda Hills Speedway**, 20 Hacienda Hills, Minot, ND 58701; Kenny Duchscherer, (701) 839-4419  



**Northern Mini Racers**, P.O. Box 415, Minot, ND 58702; Roger Lee, (701) 839-5294  


**Surrey International Raceway**, RR 1, Box 37, Norwich, ND 58768; Marlen Lenton, (701) 728-6760  



**Valley Hobbies Inc.**, 2714 Main Ave., Fargo, ND 58103; Marshall Skare, (800) 493-9971  



## OHIO

**Aerotech Raceway**, 409 Applegrove Rd., North Canton, OH 44720; (216) 499-1300  


**Canton R/C Raceway**, 2206 13th St. NE, Canton, OH 44705; Dan Mauger, (330) 833-3091  



**Classic Hobbies**, 1994 E. Waterloo Rd., Akron, OH 44312; Walt Ellis, (216) 733-8400  


**C/R Hobbies and Raceway**, 323 Center St., Ashtabula, OH 44004; Virginia Gagat, (216) 992-3833  


**CORCAR/Sams Club**, 128 Amity Rd., Galloway, OH 43119-8732; Bill Stevenson, (614) 870-7159  


**D&J R/C Raceway**, 801 W. Market St., Orrville, OH 44667; Don Yoder or Mark Nussbaum, (216) 682-4266  



**D&S Hobbies Raceway**, 7701 Crile Rd., Concord, OH 44077; (216) 354-2112  



**Flag City Raceway**, 3772 C.R. 18, Findlay, OH 45840; Ruth Hubbard, (419) 422-5589  


**Hobby World**, 940 E. Main St., Ravenna, OH 44266; Thomas or Jeremy, (330) 296-0894  


**JB Hobby & Raceway**, 8760 St. Rt. 201, Tipp City, OH 45371; Bob Curtis, (513) 845-8222  


**Kent Hobby**, 832 N. Mantua St., Kent, OH 44240; Bob Sabo, (216) 673-0422  


**Lafferty R/C Raceway**, Box 153, 70228 Hurrah St., Lafferty, OH 43951; Chris Christian, (614) 968-4818  



**Lakes Hobbies**, 3425 Manchester Rd., Akron, OH 44314; Roy Spencer, (330) 645-6912  



**Medina R/C Raceway**, 754 N. Court St., Medina, OH 44256; Bill Aholt, (216) 723-0255  


**Mid American Raceway**, 13150 Airport Hwy., Swanton, OH 43558; Bill or Chuck, (419) 475-9459  



**Mr. T's R/C Super Speedway**, 5540 CR 16, Wauseon, OH 43567; Nick Tinsler, (419) 335-3196  


**Performance R/C Club of Ohio**, 2206 13th St. NE, Canton, OH 44705; Greg Ledbetter, (216) 453-7089  


**Scoters Hobby Hut**, 234 Robbins Ave. #D, Niles, OH 44446; Dave "Scooter" Evans, (216) 544-9411  


**Steel Valley Hobbies & Raceway**, 157 N. 4th St., Steubenville, OH 43952; William Northrop, (614) 282-3003  


**Van Wert R/C Raceway**, 112 W. Main St. (above Tom's Donuts), Van Wert, OH 45891; Charlie Hire, (419) 238-4917  



**Y-City Hobby & Speedway**, 120 S. 6th St., Zanesville, OH 43701; Kevin McKenna, (614) 455-3025  



## OKLAHOMA


**Adams Creek R/C Speedway**, 5207 S. 194th E. Ave., Broken Arrow, OK 74014; John Beighle, (918) 355-1416  


**Competition R/C**, 180 SE 89th, Oklahoma City, OK 73149; James or Louise Brown, (405) 634-0809  


**Coweta Hobby & Speedway**, 310 S. Broadway, Coweta, OK 74429; Derald Seabolt, (918) 466-3948  


**R/C Speedway**, 1401 N. Vanburan, Enid, OK 73701; Sean or Jessica Hillery, (405) 237-5504  


**Remote Control Race Course**, 400 S. Vermont Ave., Suite 104, Oklahoma City, OK 73108; Rick or Steve, (405) 947-RACE  


**Wild Country Speedway**, 127 South Main, Porter, OK 74454; Charles McCollough, (918) 685-0372 or (918) 687-1686  


## OREGON

**Competition Racing Assoc.**, 17941 NE Gilson, Portland, OR 97230; Mark Taylor, (503) 761-1334  




## RACING TO BRING YOU THE BEST!

# PROTOform<sup>®</sup>

## "Letting" it Rip

The 1996 NORRCA Super Oval Winterfest lived up to its reputation as one of the most competitive oval races anywhere. Without a doubt, it is the fastest R/C race held anywhere in the world. You might say that Domingus Hills is the Talledega of the R/C world. As with Talledega, raw horsepower and a well-honed aerodynamic package are absolutely essential. It was only a year ago that Mike Blackstock became the first racer ever to make a 20-lap run in 4 minutes. At this year's event, a total of 10 racers accomplished this feat throughout the weekend (eight individual drivers and two expert modified drivers). Who will be the first to make a 21-lap run? It'll be very interesting.

Team Associated made one of their infrequent visits to the Domingus Hills Velodrome, but it was an appearance that will not be forgotten for a while. As usual, HPI's Gary Hamilton was extremely fast and reset his own track record in qualifying. Associated's Roger Pane and Cliff Lett were within 1 second of Gary's pace. They were followed by Kent Clausen, Mark Pavidis and Shawn Ireland. All six qualified with a 20-lap pace, and they were all Protoform-equipped. Meanwhile, Rick Hohwart and Bill McAneny qualified 1-2 in the Super Speedway (enduro) category, which was eventually won by a very hot Roger Pane. Bryan Blaser TQ'd the Expert Mod Class. One of the most impressive performances of the weekend was that of Expert Stock racer Joe Blackburn. Joe took 9 seconds off the old track record and went on to win the A-Main by almost a lap over Steve Saik.

The A-Main for the Invitational Class was a real barnburner. Cliff Lett was totally dialed for the Main. He not only finished ahead of the pack but also ripped off a new record of 20 laps, 4.08.38. Gary Hamilton, Kent Clausen and Mark

Pavidis finished in that order within 3 seconds of Cliff. Great race, guys! Every racer mentioned in this column used the Protoform no. 1210R 1996 T-Bird HS (high speed). Incidentally, we realize that there are a lot of Chevy fans out there, and we haven't forgotten about you. In late December 1996, Protoform released a super-svelte (but realistic) shaped 1997 Monte Carlo HS—part nos. 1215R and 1215L. As usual, the R (regular) weight Lexan is recommended for



**Protoform T-Bird HS**  
part no.—1210R

velodrome competition.

The NORRCA Winterfest race has continued the tradition of hosting an "Insane Speed Run" competition. Again, the records took a beating. Shawn Ireland's Aveox-powered car was quite possibly the fastest ever seen but was blowing tires off with every hot lap attempted. The defending champ, John Peterson, debuted a new "rocket," once again using Twister power. He beat his old record with a run of 85mph. But when all the smoke had cleared (literally), Cliff Lett once again showed that he was the R/C "King of Speed" when he basted his Aveox-powered 10LSO to an incredible record run of 86mph. Cliff and John both used modified versions of the Protoform narrow P-35 Nissan no. 1402NR. Insane Speed Run cars must be seen to be believed. They're animals!

What's new at Protoform? Check out our latest Bimmer and Calibra bodies for the touring-car enthusiasts. They're made to fit the YR-4M, which is slightly wider than the rest. Hey 1/8-scale gas racers, we've got two new bodies

### New and Hot

- |       |   |
|-------|---|
| 1406* | 1996 Benz C-Class (ITC) with 2 wing sizes   |
| 1407  | Peugeot 905B on-road (wide) available in 1407H (high downforce) 1407 (medium downforce) 1407L (low downforce) |
| 1408* | 1996 Audi A4 (BTCC) touring car with 2 wing sizes   |
| 1409* | 1996 BMW 318i (BTCC) touring car with 2 wing sizes  |
| 1410  | 1996 Camaro (Trans Am Series) for Associated Dual Sport   |
| 1512  | 1997 Ram off-road truck for RC10GT (fits wide shock towers)   |
| 1513  | Ripper Double-X 'CF' with wing for Losi Double-X 'CF'   |
| 1514  | 1997 Chevy C-1500 off-road truck for Associated RC10T2  |

\*Fits Tamiya, Yokomo YR-4 and HPI RS4 (narrow).

## Racing to Bring You the Best!

### RACING TO BRING YOU THE BEST!

**Cressona Mall Speedway**, Rt. 61, Pottsville, PA 17901; (717) 385-3506

**DC Ultra Trax**, 13 York Rd., Wycombe, PA 18974; David Cowan, (215) 672-5200

**Dreamboat Hobbies**, 2810 Pennsylvania Ave. W., Warren, PA 16365; Louie Dussia, (814) 723-8052

**East St. Raceway**, 736 E. Railroad Ave., Verona, PA 15147; (412) 826-0602

**Hipkin's Hobbies**, 402 W. Avondale Rd., West Grove, PA 19390; Doug, (610) 869-8585

**Hobby America Raceway**, 5 Fitzsimmons St., Duke Center, PA 16729; Dan or Mike Coast, (814) 966-3765

**Hobby House Raceway**, Downingtown Marketplace, Downingtown, PA 19335; J.T. Nelson, (610) 269-1300

**Koontz's Home & Hobby Center**, 1205 Hoover St., Pittsburgh, PA 15204; (412) 331-3866

**Kranzel's R/C Raceway & Hobbies**, 415-B Bosler Ave., Lemoyne, PA 17043; David or Stuart Kranzel, (717) 737-7223

**Lug Nut Raceway**, Rt. 309 at Hartman Rd., Montgomeryville, PA 18936; Kathy Anderson, (215) 542-8250

**Marshall's R/C Raceway**, RR 4, Box 640, Honesdale, PA 18431; Bill or Dot Marshall, (717) 729-7458

**The Mushroom Bowl**, 812 W. Cypress St., Kennett Square, PA 19348; Joe, Bruce, or Drew, (610) 444-1850

**Owens Race-A-Rama**, RR 2, Box 98 F, Hunlock Creek, PA 18621; Rany Owens, (717) 477-3220

**Pinion Twisters**, 3M Plant, Green Ln. and Mitchell, Bristol, PA; John (215) 632-9744, Bob (215) 945-0325

**Pit Stop Hobbies**, 262 W. Main St., Mount Joy, PA 17552; James Stoult Jr., (717) 653-6222

**Pro Challenge Raceways**, Wycombe Ave. (P.O. Box 536), Lansdowne, PA 19050; Bob Paulavage and Don Fewkes, (610) 622-7651

**Prop & Wheels Raceway**, 139 W. Broad St., Tamaqua, PA 18252; Gil Walters, Prop & Wheels Hobbies, (717) 668-2288

**RCO Raceway**, 519 Broadway, Hanover, PA 17331; Chris Shaffer, (717) 633-9490

**R/C Pro Speedway**, Millville Rd., Bloomsburg, PA 17815; John Swisher, (717) 387-0266; fax (717) 387-4937

**Riverside Raceway**, PA Ave. W & Hickory, Warren, PA 16365; Jeff, (814) 723-4211

**Rolling Wheels R/C Raceway**, Westhill Shopping Center, Coraopolis, PA 15108; Peg, (412) 262-4858

**Road Runner Raceway**, 1027 E. 7th St., Bloomsburg, PA 17815; John, (717) 784-1260

**S.A. Hi Banks**, Hahn's Dairy Rd., Palmerton, PA 18071; Scott Andrews, (610) 377-6123

**Sinking Spring Race Center**, 237 South Hill St., Sinking Spring, PA 19608; Randy Gelsinger, (610) 670-0760

**Staub Bros. R/C Speedway**, 31 Locust St., Gettysburg, PA 17325; Todd or Scott Staub, (717) 334-5445

**T-N-T Raceway**, Randolph Rd., Great Bend, PA 18821; Ed Kraft, Rd. 1 Box 199C, Hallstead, PA 18821, (717) 967-2604 or Frenchie, (607) 775-1756

**Wagonhill Hobbies**, 967 New Castle Rd., Rt. 422, Butler, PA 16001; Jeff Hyatt, (412) 865-9877

**Willow Mill Speedway**, 37 N. Season's Dr., Dillsburg, PA 17019; George Verbowitz, (717) 432-4445

**Willow Run R/C Raceway**, 135 Wright St., Corry, PA 16407; Jim Small, (814) 664-8147

### PUERTO RICO

**Dorado Offroad R/C Track**, Pista Atletica Bo. Higullar, Dorado, Puerto Rico 00646; Roberto Lamoso/Jaime Ramos, (809) 796-5603 or (809) 796-1734

**Hacienda Muñoz R/C Track**, Carr. #14, Juana Diaz, PR 00795; (809) 837-7083

### RHODE ISLAND

**Rhode Runner Raceway**, 20 State St., Bristol, RI 02809; Bill or Betsy, (401) 254-0409

**SK Hobbies Inc.**, 15 Carl St., Johnston, RI 02919; Slim or Keith, (401) 453-1440

**Tri-State R/C Raceway**, 205 Hallene Rd., Warwick, RI 02886; Raymond Dean, (401) 738-4908

### SOUTH CAROLINA

**Extreme R/C Raceway**, 5976 Grace Lane, Myrtle Beach, SC 29577; Kevin Bullock, (803) 236-2083

**The Grove Racing Center**, 1765 E. Main St., Rock Hill, SC 29730; Myka Durham, (803) 327-4121

**Hobbies and More**, 1570 S. Main St., Darlington, SC 29532; Jerry Pollard, (803) 393-0355

**J&M R/C Hobbies**, 5341 Dorchester Rd., Evanston Plaza, N. Charleston, SC 29418; Mike Smith, (803) 552-9449

**ORA Atomic Racing Facility**, 373 Boyd Pond Rd., Aiken, SC 29803; Bill Jackson, (706) 855-0846 or (803) 642-0314

**Racer's Choice Remote Control**, 4014 Fernandring Rd., Piney Grove Shopping Center, Columbia, SC 29212; Clifford McLinden, (803) 561-0000

**The Great Escape**, 105 Franklin Ave., Spartanburg, SC 29301; Jonathan Bowen, (803) 574-5273

**World Hobbies**, 707 Sulphur springs Rd., Greenville, SC 29611; Bob Pittman, (803) 246-4702 (Closed after 4:00 pm Mondays)

### SOUTH DAKOTA

**Action R/C Raceway**, 107 N. Main, Mitchell, SD 57301; (605) 996-6895

**Dakota Off-Road Racers**, 2989 W. Br. Co. 12, Aberdeen, SD 57401; (605) 226-0604

### TENNESSEE

**Beaver Dam Racing**, 7408 Royal Springs Knoxville, TN 37918; Ed Bardill, Tennessee Association of Auto Racing, (423) 922-4309





## New Caps Dominate

**P**ro-Line/Jaco caps are already having a significant effect on racing results across the country. At our second test session at On Trax raceway in Browne Mill, NJ, team drivers Steve Fiume and Bob Smith qualified first and second in 1/10-scale modified at the Trinity Oval Shootout. Steve then went on to a convincing win using our super-fast capped tires. Neither driver had a blowout or any tire-related problems.

The 1996 Oval Masters is the premier concrete oval event in the country. This year, there was a new player at the Masters as Pro-Line/Jaco stormed Georgia with a new capped tire. For two rounds, team Pro-Line/Jaco/Trinity driver Frank Polimeda sat on the pole of the invitational class with four Jaco tires separating him from the rest of the field. Although we did not secure a TQ or a win, Pro-Line/Jaco had four drivers in the A-Main. That is more than any other tire company at the event.



Pro-Line/Jaco would like to congratulate Mike Swauger for his sweep of the ROAR On-Road Nationals. Mike used Pink Fronts (part no. 2124) and White Rears (2144) to dominate 1/10-scale Modified. He followed this up with a win in 1/12-scale using Purple Fronts (2325) and Pink Rears (2342). Congratulations Mike!

## RACING TO BRING YOU THE BEST!

P.O. Box 456, Beaumont, CA 92223;  
(909) 849-9781; fax (909) 849-2968

Cumberland Valley Raceway, P.O. Box 2231, Ashland City, TN 37015; Jamie Pate, (615) 792-4371, ext. 1195

D&M's Downtown Raceway, 2703 U.S. Hwy. 411S, Maryville, TN 37303; (615) 681-8919

Lawson Raceway, 152 Joel Rd., Oliver Springs, TN 37840; Anthony Lawson, (615) 995-9351

Machine-Head Straits, 938 Grandmere Rd., Lawrenceburg, TN 38464; Larry and Eliane Sanders, (615) 762-6630

MSA R/C Racing, Rt. 12 Box 489 B, Crossville, TN 38555; D.R. Findley, (615) 456-0027

Robertson's R/C Raceway, 175 Seavers Rd., Jackson, TN 38301; Travis Robertson, (901) 424-6423

Sparta Raceway Park, 32 N. Main St., Sparta, TN 38583; Carl (Buddy) Elrod, Rt. 5 Box 6652, Sparta, TN 38583; (615) 836-8450 or (615) 761-3407

Tri-County R/C Raceway, 919 Little Dogwood, 1312 Kingston Hwy., Kingston, TN 37763; Dwayne Romine, Kyle Romine, (615) 376-2330, 376-9955

### TEXAS

AA Raceway, 1617 Foomey Rd., Austin, TX 78704; Wolf Gumfory, (512) 474-8277

Big Mike's R/C Raceway, 1405 W. Cotton St. (behind the Locker Room), Longview, TX 75604; (903) 297-7814

Eastex Raceway, 45000 Hwy. 59 N., New Caney, TX 77357; Tom Keller, (713) 399-9777

Fastrack Raceway, 301 Edith Drivel, El Paso, TX 79924; Hector Gonzalez, (915) 779-4524

Flip & Spin R/C, 5957 Jones Rd., Bryan, TX 77807; Garland Crabb, (409) 822-7311

Hal's Hobby Raceway, 1440 Bessemer, El Paso, TX 79936; (915) 591-2213

The Hobby Center Raceway, 14104 Stan Schiveter Loop, Suite 1, Killeen, TX 76543; Lawrence Remick, (817) 690-7311

Hobbycraft Speedway, 819 N. Main St., Corsicana, TX 75110; Keith Hoffman, (903) 872-6761

Hobbytown USA, 7516 FM 1960 W., Houston, TX 77070; Fred Platman, (713) 955-7097

Hobbytown USA, 999 E. Basse Rd., Suite 177, San Antonio, TX 78209; Joe Senz or Clark Baisdon, (210) 829-8697; fax (210) 829-8707

Houston R/C Hobbies, 6338 Skyline Dr., Houston, TX 77057; Lynn Cramer, (713) 266-6006

Indy R/C World, 220 Saturn Rd., Garland, TX 75041; Steve Webster, (214) 271-4844; fax (214) 271-4502

Keyser's Hobbies, 1643 Texas College Station, TX 77840; Bill Bennett, (409) 693-8095

North Houston Speedway, 11847 Spears Rd., Houston, TX 77067; Bob or Carol Hillin, (713) 872-2471

Performance Raceway, 1106C Witte Rd., Houston, TX 77055; Jorge Tabush or Terry Schmid, (713) 464-4458

### FLORIDA

Playfit R/C Raceway, 3518 W. Loop 306, P.O. Box 5245, San Angelo, TX 76902; Sammee Favre, (915) 942-6469

### FLORIDA

Rivercity Speedway, 11731 Wetmore, San Antonio, TX 78247; Ralph Hernandez, (210) 359-6870; Joe Toledo, (210) 341-5652

### FLORIDA

Rough Country, 905 Jacksboro Hwy., Wichita Falls, TX 76301-5310; Robert Kerr, (817) 322-2453

### FLORIDA

Star/Car Raceway, 5802 Patton St., Corpus Christi, TX 78415; Mike Hellums, (512) 289-0066; Race Hotline, (512) 881-6105

### FLORIDA

T&T Eagle, 161 W. Spring Creek Pkwy., #601, Plano, TX 75023; Tony Welborn, (214) 517-0562

### FLORIDA

Texas Speedway, 6707 Chimney Rock, Bellaire, TX 77401

### FLORIDA

Tiger's Den R/C Speedway, 702 E. Broad St., Mansfield (DFW), TX 76063; Bob Burns, (817) 477-5513

### FLORIDA

T.O. Offroad Raceway, 6236 Quail, El Paso, TX 79924; Efrén Saenz, (915) 821-7522

### FLORIDA

Triple Jays R/C Raceway, Route 4, Box 720, Allen, TX 75002; Jeffrey Jay Johnson, (972) 562-7967

### FLORIDA

Wild Bill's Raceway, 535 E. Shady Grove, Irving, TX 75002; Lynn Morgan or Jerry Williams, (214) 438-9224

### FLORIDA

### UTAH

Fastrax, 205 N. Carbon Ave., Price, UT 84501; Dave Johnson, (801) 637-6603

### UTAH

Intermountain R/C Raceway, 8481 W. 2700 S., Magna, UT 84044; David Mott, (801) 250-8303

### UTAH

Payson R/C Raceway, 955 South Main, Payson, UT 84058; Gus Wood, (801) 224-3852 and Lasca Wood, (801) 222-8677

### UTAH

WOR Raceway, 3170 Brinker Ave., Ogden, UT 84401; Brian Worton, (801) 393-2530

### UTAH

### VERMONT

Barre Town R/C Club, 14 South Main St., Wall St. Complex, Barre, VT 05641; Russ Tribble or Pete Perreault, (802) 888-2860 or (802) 476-9458

### VERMONT

Bradford R/C Racing, Main St., Bradford, VT 05033; Seth Bear, (802) 222-9674

### VERMONT

Stoughton Pond Raceway, Stoughton Pond Rd., Perkinsville, VT 05151; Rick Adams, (802) 263-9321

### VERMONT

### VIRGINIA

Bob's Hobbies & Raceway, 910-J Brandy Creek Dr., Mechanicsville, VA 23111; Bob Wagner, (804) 746-2758

### VIRGINIA

Brown Brothers Hobbies, 924 North Main Street, Dumfries, VA 22026; Joel or Bob Brown, (703) 221-5746

### VIRGINIA

Cooper's R/C Raceway, Rt. 4, Box 1228, Chatham, VA 24531; (804) 724-4182

### VIRGINIA

Fairystone R/C Speedway, Rt. 4, Box 918, SR635 Goblintown, Stuart, VA 24171; Pat Moon Jr., (540) 930-3984

### VIRGINIA

Gloucester Scale Hobbies, 2352 George Washington Memorial Highway, Hayes Plaza, Hayes, VA 23072; Rob Thein, (804) 642-3484

### VIRGINIA

Hobby Hangers Speedway, 4433 A,

Brookfield Corp. Dr., Chantilly, VA 22021; Mark or Billy, (703) 631-8820

### FLORIDA

The Hobby House, 116 Edds Ln., Sterling, VA 20165; Ron Beckman, (703) 444-0333

### FLORIDA

KC's Radio Control & Repair, Rt. 4, Box 312, Trents Ferry Rd., Lynchburg, VA 24503; Curtis or Kim Wright, (804) 384-8596

### FLORIDA

Olde Towne Hobby Shoppe, 9105 Center St., Manassas, VA 22110; Arnie Levine, (703) 369-1197

### FLORIDA

Roadmasters/Rick's Hobbies, 12201 Balls Ford Ave., Manassas, VA 22110; Rick, (703) 330-6833

### FLORIDA

Shamroc Raceway, P.O. Box 3739, Winchester, VA 22601; Kevin Allen, (703) 662-0403

### FLORIDA

Trackside Hobbies, 1920 E. Pembroke Ave., Hampton, VA 23663; Rick Cardwell, (804) 723-4170

### FLORIDA

### WASHINGTON

Allie's, 108 South K St., Aberdeen, WA 98520; (206) 533-6638

### WASHINGTON

A-Main Raceway, 14011 NE 3rd Ct., Vancouver, WA 98685; Monty Coleman, (360) 571-8404

### WASHINGTON

Burien Toyota R/C, 15025 1st Ave., South, Seattle, WA 98148; Ray Meek, (800) 654-6456

### WASHINGTON

Four Season R/C Racing, 2941 Sleater Kinney Rd. NE, Olympia, WA 98506; Gary and Sharon Brown, (360) 491-2430

### WASHINGTON

Hale's R/C Raceway Park, 10611 136th St. E., Puyallup, WA 98374; Walt Hale, (206) 845-7875

### WASHINGTON

Hannegan Speedway, 4212 Hannegan Rd., Bellingham, WA 98225; Dana Hoggarth, (360) 734-4090

### WASHINGTON

Jim's Wings & Wheels Raceway, 1827 S. Washington, Kennewick, WA 99337; (509) 586-7420

### WASHINGTON

L&L R/C Raceway, 15818 S.E. 287th, Kent, WA 98042; Bob Lewis, (206) 631-1664

### WASHINGTON

Raceway Hobbies, 188 Sunset Ave. S., Edmonds, WA 98020; Brian Bodine, (206) 774-3285

### WASHINGTON

Rattlesnake R/C & Raceway, Brag T-121 Big Pasco, Pasco, WA 99301; Bill Brandt, (509) 545-4495

### WASHINGTON

Schmidt's Auto Parts, 10305 Old Hwy. 99, Marysville, WA 98271; Jon Failla, (206) 653-8838

### WASHINGTON

Spokane Indoor Raceway, 6422 E. 2nd Ave., Spokane, WA 99212; Dave Matson, (509) 534-RACE

### WASHINGTON

Tacoma R/C Raceway, 6305 6th Ave., Tacoma, WA 98406; Scott Brown, (206) 565-1935

### WASHINGTON

Tearor Raceway, Fantasy World Toy and Hobby, 7901 S. Hosmer, Tacoma, WA 98408; Dave Kleinman, (206) 473-6223

### WASHINGTON

### WEST VIRGINIA

Burr-Fab Raceway, 90 Davis St., West Union, WV 26456; Mark Travis, (304) 873-2487

### WEST VIRGINIA

Fulton's R/C Raceway, 2646 Chapline St., Wheeling, WV 26003; James Fulton, (304) 233-5355

### WEST VIRGINIA

Left Turn Hobbies, 100 Saco Ln. (by Post Office), Glen White, WV 25849;



Stretch, (304) 255-3930

## ALABAMA

**Race Zone**, Hopewell Rd., Rt. 8, Box 343A, Fairmont, WV 26554; Joe Clutter (304) 368-1000

## ALBERTA

**WVRCA R/C Club**, 142 West Main, Bridgeport, WV 26330; D.W. Weed

## ALASKA

## WISCONSIN

**ABC R/C**, 244 W. Main St., Waukesha, WI 53186; Dick (414) 542-1245

## ALBERTA

**Bayland Hobbies**, 9510 Ashwaubenon, Green Bay, WI 54304; Dan or Jay Boettge (414) 339-8288

## ALBERTA

**JJ's Dirt Heaven**, 6028 County Road K, Champion, WI 54229; Jim or Jeff Jansen (414) 866-9096

## ALBERTA

**Mid-West Tri-Clone**, 3745 Shuster, West Bend, WI 53095; Tom Holz (414) 334-0429

## ALBERTA

**NARCAR Raceway**, 4331 E. Wall St., Eagle River, WI 54521; Mary O'Brien, (715) 479-5154

## ALBERTA

**Pro-Star Racing**, 726 Pine St., Green Bay, WI 54301; Chuck (414) 494-1233 or Terry (414) 469-5566

## ALBERTA

**S&N's Tracksides Hobbies and Raceway**, 6045 N. Green Bay Ave., Milwaukee, WI 53209; Scott Ernst, (414) 351-1910

## ALBERTA

**Sparta R/C Raceway**, R&S, Sparta, WI 54656; Eric Johnson, (608) 269-6613

## ALBERTA

## WYOMING

**Collectable Creations Off-Road Oval Track**, 1790 Dell Range Blvd., Cheyenne, WY 82009; Phil Severson, (307) 632-2156

## ALBERTA

**CWC Supercross**, 113 S. 3rd E., Riverton, WY 82501; Lasting impressions, (307) 857-2068

## ALBERTA

## ARGENTINA

**Club A. Velez Sarsfield**, Av. J.B. Justo 9000, C.P. 1408, Buenos Aires; Jorge Herrero, 54-01-658-5851

## ALBERTA

**Club A. Velez Sarsfield**, Av. J.B. Justo 9000, C.P. 1408, Buenos Aires; Jorge Herrero, 54-01-658-5851

## ALBERTA

## AUSTRALIA

**A.C.T. Model Car Racing Club**, offroad track—Wanniassa Raceway, Hyland Place, Wanniassa A.C.T.; indoor track—Epic Complex, Northbourne Ave., Canberra North A.C.T.; Gary Davey, 61-6-2871411

## ALBERTA

**Aubry R/C Car Club**, Aubry Showgrounds, Aubry, NSW 2640; Ron Langman, 060-247-128

## ALBERTA

**Canberra Off-Road Model Car Club**, Goyder St., Narrabundah, ACT 2604; Graham Brown, 61-6-241-3070

## ALBERTA

**Central Coast ORRC**, EDSACC Sports Complex, Bateau Bay, N.S.W. Australia 2281; Peter J. Knight, 61-43-693-698

## ALBERTA

**Illawarra RCEC**, Croome Sporting Complex, Albion Park Rail, NSW 2527; Mel or Andrew, 042-714-683

## ALBERTA

**Lakeside R/C Racing Car Club**, Hollywood Dr., Lansvale, NSW 2166; R. Bartolozzi, 62-2-907-9800

## ALBERTA

**Northern Districts Model Rally Club, Inc.**, Rear Stanford centre, 16 Stanford Way, Malaga, Western Australia 6066; G. Thirlwell, 61 (9) 249 3855; fax 61 (9) 249 4778; email tony@ois.com.au

## ALBERTA

**Templestowe Flat Track Racers**, Templestowe Reserve, Corner of Porter St. and Williamsons Rd., Templestowe, Melbourne, Victoria 31066; Renato Benci, 61 (3) 9553 4625

## ALBERTA

**Wodonga R/C Car Club**, 11 Murphy St., Wodonga, VIC 3690; Ron Langman, 61-60-247-128

## ALBERTA

## BELGIUM

**ATR-Alka-Tele-Racing**, 3570 Stationstraat 21, Alken Limburg; 0032-11-25-49-03

## ALBERTA

**Cartroubles Indoor Buggy Track**, Jan Moonsstraat 52-56, 2160 Wommelgem, Belgium; Guy Ermes, 32-3-326-51-15; fax, 32-3-326-51-01

## ALBERTA

**M.B.V. Parc de Reist**, Tenierslaan, 28, B1910 Kampenhout, Belgium; Frank Mostrey, fax 32-0-16657518

## ALBERTA

**MBV-Kampenhout**, Tenierslaan 28, Kampenhout B1910, Belgium; Frank Mostrey, phone and fax 0-16-65-75-18

## ALBERTA

**MRCZ**, Centrum, De Burg, Belgium; Montie, 75-71-63

## ALBERTA

**Model Racing Club Oudenaarde**, Scheldekant, 9700 Oudenaarde, Belgium; A. Chanterle, 32-55-31-36-48; fax, 32-55-30-19-12

## ALBERTA

## BRAZIL

**Brasilia R/C Motor Circuit**, Estacionamento do Estadio Mane Guarrincha, Brasilia, DF 70000, Brazil; Alexandre (Alex), 55-061-273-7205

## ALBERTA

**Hobby Center**, SOS 210 BLH Apt. 204, Brasilia, DF-Brasil 70.273; 061-242-0488

## ALBERTA

**Jungle Drive**, Rua Alberto Maranhao, No. 219 Icha do Gov. Rio de Janeiro, 21940-490; Paulo Brito, (021) 396-0851 or (021) 393-7449

## ALBERTA

**MP Raceway**, AV. Nacoes Unidas, 6815 Lapa, Sao Paulo; Gerd Heitrotter, 55-11-9819039

## ALBERTA

**Off Roaders**, Av. Guillaume Dummont Villars, 317, Sao Paulo, CEP 05640; Waldir Ielpo, (055) 011-260-5628; fax (055) 011-831-4931

## ALBERTA

**Way of R/C Off-Road Cerrado**, Rua Paraiba 1323, 1st floor, Belo Horizonte, Minas Gerais; Claudio T. Corrae, (031) 227-6111, fax (031) 227-6869

## ALBERTA

## CANADA

**Action Weelz**, 462 Turcotte, Vanier, Quebec G1M 1R6; Regent Tardif, (418) 527-5756

## ALBERTA

**Advance R/C Raceway**, 4181 Sheppard Ave. E., Scarborough, Ontario M1S 1T3; Albert Lau, (446) 321-8377

## ALBERTA

**A&J Toronto R/C Raceway**, 24 Main St., Building B, Unionville, Ontario L3R 2E4; (905) 305-1479

## ALBERTA

**ATN**, Auto Teleguide Nicolet, 2000 Rue Paul Hubert, Saint-Jean - Baptiste-de-Nicolet, Quebec J3T 1E5; Louis Durand, (819) 293-6097

## ALBERTA

**Auto Sprint**, 6065 Des Grands Prairies, St. Leonard, Quebec H3G 2R6; David Kalayjian, (514) 287-3503

## ALBERTA

**Circuit Pepsi**, Centre de Location, 37 du Roi, Sorel, Quebec (514) 979-7989

## ALBERTA

**Circuit Plessis**, 260 Rang 9 Ouest, Plessisville, Quebec G6L-2Y2; (819) 362-3743

## ALBERTA

**Circuit R/C Pro**, 1500 Chemin Sullivan, Val d'Or, Quebec J9P 1M1; R/C Modeler Plus, (819) 874-3918

## ALBERTA

**Circuit Teleguide St. Roch**, 363-B St. Charles, St. Roch de L'Achigan, Quebec J0K 3H0; (514) 588-4254, fax (514) 588-6554

## ALBERTA

**Club Avatt**, 244Jules-Richard, Deauville, Quebec JIN 3; Daniel Vanier, (819) 864-6262

## ALBERTA

**Club RCSI**, 44 Rue Holiday, Sept-Iles, Quebec G4R; Sylvio Gerard, (418) 968-6575; Hobby Shop, (418) 962-6565

## ALBERTA

**CRCCC**, Box 309, Clinton, Ontario NOM 1L0; Eric Russell, (519) 482-9429

## ALBERTA

**Dustkickers R/C Raceway**, Carson Pit Road, Quensel, BC V2J 4B1; Darrel Dinsdale, (604) 747-2680

## ALBERTA

**Dynamic Hobbies**, 21 Concourse Gate, Unit 6, Nepean, Ontario K2E7S4; Clark Freeman, (613) 225-9634

## ALBERTA

**East Coast Model Center Raceway**, 13 Glen Stewart Dr., Suite 1, Southport, Prince Edward Island C1A 8X9; Gary Stephen, (902) 569-3262

## ALBERTA

**Evolution Speedway**, 1935 Glengrove Rd., Pickering, Ontario L1V 1X3; Eric Lang, (905) 839-2084

## ALBERTA

**Fast-Trax Speedway**, RR 4, Trenton, Ontario; Russ McPeak, (613) 394-6411

## ALBERTA

**Fly 'N Bryan's Radical Raceway & Little Shop of Hobbies**, RR #1, Site 12, Comp. 49, Chase, British Columbia, Canada V0E 1M0; Bryan Coffey/ Dani Potvin, (604) 955-0669

## ALBERTA

**Honda House Motor Speedway**, 384 Richmond St., Chatham, Ontario N7M 1P9; John Elliot, (519) 354-5530

## ALBERTA

**Interior R/C Raceway**, 34-1605 Summit Dr., Kamloops, BC, V2E 2A5; Martin Vannieuwenhuizen, (604) 374-1288 or (604) 374-8458

## ALBERTA

**J-T International Raceway**, 127 Milligan Lane, Nanaimo, Ontario K7R 8A1; N. O'Neill, (613) 354-0099

## ALBERTA

**Mid-Canada R/C Speedway**, 1678 St. James St., Winnipeg, Manitoba R3H 0L3; Richard Driedger, (204) 339-6566

## ALBERTA

**Minatures & Passions**, 204 St. Charles, #103, Ste. Therese, Quebec, Canada J7E 2 B4; Gilles Lachance, (514) 979-7989

## ALBERTA

**MORRAC Raceway**, 6499 Crowchild Tr. SW., Box 36060, Calgary, Alberta T3C 7C8; (403) 254-1386

## ALBERTA

**Off-Road R/C Raceway**, 76 Eddystone Ave., North York, Ontario M3N-1H4; Ron Lefebvre, (416) 740-0536

## ALBERTA

**Prince George Radio Controlled Car Club**, 202 Explorer Cres., Prince George, B.C. V2M5R8; Doug Waller, (604) 561-0035

## ALBERTA

**Quintrax Speedway**, 610 Dundas St. East, Belleville, Ontario K7K 2M1; (613) 962-1414; fax (613) 962-7306

## ALBERTA

**Randy Shantz Raceway**, 1015 W. 14th St., North Vancouver, British Columbia; Steve Mulhall, (604) 945-3888

## ALBERTA

**R/C Champ Raceway**, 670 Progress Ave., Rear Unit #13-16, Scarborough, Ontario, M1H 3A4; Ben, Matthew or Louie (416) 289-8717

## ALBERTA

**RC World**, 7070 Haldibrook Rd., RR #1, Caledonia, Ontario N3W 2G8; Don Nicholls, (905) 679-3177 or Keith Sequin, (905) 388-9855

## ALBERTA

**Recreation R/C Raceway**, Hwy 16 and Ferry Ave., Prince George, BC; Doug Waller, (604) 561-0035

## ALBERTA

**Ronbo's R/C Racing**, RR 1 Glen Walter Cornwall, Ontario K6H 3G4; Ron Groux, (613) 936-0176

## ALBERTA

**Rousillon Hobby Track**, 177-D St-Jean Baptiste, Chateaufort, Quebec J6K 3B4; (514) 698-2151

## ALBERTA

**Sheldon's Raceway**, Box 597, Cutknife, Saskatchewan; Sheldon Bradlow, 398-2232

## ALBERTA

**Spinnin Wheel Raceway**, RR 1, Ariss, Ontario NOB 1B0; (519) 824-1614

## ALBERTA

**South Okanagan Roadhogs**, Skha Lake Rd., Penticton, BC; Willie Lemm, (604) 492-5698

## ALBERTA

**Strathclair Park**, Old Garden River Rd., Sault Ste. Marie, Ontario P6A 5T1; (705) 759-1855

## ALBERTA

**Sudbury Organized Auto Racing**, 765 Barrydowne Rd., Sudbury, Ontario P3A 3T6; Ken Moore, (705) 524-5339

## ALBERTA

**Thunder Alley Raceway**, Lambton Mall, 1380 London Rd., Sarnia, Ontario N7S 1P8; Rob Smith, (519) 882-3361

## ALBERTA

**Vancouver R/C Road Racers**, #100-2733 Barney Hwy., Coquitlam, British Columbia V3E1K9; Roger Brown, (604) 945-3888

## ALBERTA

## COLUMBIA

**Club De Automodelismo Colombiano**, Centro Recreativo Cafam, Kilometro 14 Autopista Norte, Santa Fe de Bogota, D.C. Colombia; Jorge Delgado, 1-6130588

## ALBERTA

**Club De Automodelismo Colombiano**, Centro Comercial Guaymaral, Kilometro 16 Autopista Norte, Santa Fe de Bogota, D.C. Colombia; Jorge Delgado, 1-6130588

## ALBERTA

**Garoso Raceway**, Avenida Libertadores con Diagonal Gran Colombia, Cucuta, Colombia; Gabriel Rodriguez, 975-751892

## ALBERTA

## CYPRUS

**Racing Model Club**, Kennedy Ave. N. 42, Nicosia, Cyprus; Andrea Sotiriou, 493186; fax 493229

## ALBERTA

## DENMARK

**Brondby Motor Club**, Roskildevejs 460 Rodovre, Denmark 2610; Soren Boy Holst, 45-31-472-462

## ALBERTA

**Holstebro R/C Buggy Club**, Mozartsvej 7500 Holstebro, Denmark 2600; Michael Brusholt, 45-97-412-734

## ALBERTA

**Klub 144 Raceway**, Bagsvaerdvej 144A, 2800 Lyngby, Denmark; Henrik Carstens, 45-42-88-3691

## ALBERTA

**Rainbow Raceway**, Eriksvej 9 Glostrup, Copenhagen 2600; P. Christiansen, 45-52-848-504

## ALBERTA

**Thor Minirace Odense**, Sohusvej 255, Alleso, Odense, Behind Alleso Hallen (Sport Centre), Odense, Denmark; Ulrich Rasmussen, 45-65-303-707

## ALBERTA

## DOMINICAN REP.

**Adoca R/C Speedway**, Feria ganadera, Santo Domingo; (809) 220-5266

## ALBERTA

**La Barranquita R/C International Speedway**, Santiago; (809) 582-2303

## ALBERTA

## ECUADOR

**Hobby Centro A.C.R.O. Club**, Via a Turi Km 0 S., Cuenca-Ecuador; Teddy Jaramillo, 593-7-831-289; fax 593-7-817082

## ALBERTA

## ENGLAND

**Chessington Radio Car Club**, Surbiton Sport Club, Riverhill Estate, Worcester Park Rd., Worcester Park, Surrey, England; Ian Spiller, 0252-20657

## ALBERTA

**Hampshire Racing Center**, Viabes Craft Center, Basingstoke, Hampshire, England; Tony Eudola 44-1276-61402

## ALBERTA

**Hinckley RCC**, Three Potts Inn, A5 Watling St., Hinckley, Leicestershire, UK; Bruce, 01455-890580

## ALBERTA

## FRANCE

**Auto Model Club de l'ouest**, 45 rue de Manez, Loerjett, France 29470; Peuziat Michel, 02-98071764

## ALBERTA

**Auto Electron**, 35 rue B. de Ventadour, Limoges, France 87000; M. Boudoul, 55 062763

## ALBERTA

**Crame Roncq**, 64 rue du Becquerel, 59370 Mons le Baroeul, France; Michael Hondekyn, 33-20042755

## ALBERTA

**Lorgies Bolides**, rue Beau-Riuz, 62840 Lorgies, France; Mme. Houdrquin Sabine

## ALBERTA

## GERMANY

**Dreykorn Raceway**, Heuchlinger-Hauptstr. 43, Laut, 91207; Hermann Hensel, 09123-81457

## ALBERTA



# Track Directory

**Everly's Racing**, Palm St., 188, Surabaya, Jatim, Indonesia; Jhon Mudik, 62-31-595-888

**Badan Pengelola Karinda Circuit**, Kompleks Rukan Buncit Mas Blok GC-6 Jl. Mampang Parapatan Raya 108, Jakarta-Selatan, Indonesia, 12760; Wnied W. Soedarmadi, 62-21-7900878; fax 62-21-7946431

**Pondok Cabe Circuit**, Jl. Kunir No. 83, Pondok Cabe, Ciputat, Jakarta, Indonesia; Ali Agus Salim, 7403568-9; fax 7491533

**Sentul World Hobbies**, Citeureup Bogor Jawa Barat, Indonesia; International Circuit Hilton Hartanto, Ian Sentul International Sirkuit, KM 42 62-21-751-2439

## ISRAEL

**Ircra Off-Road**, Rahanana, Israel; Yaron Zafiri, (972) 030549937

**Nahshoneat**, Abba Nile Silver Str. 64, Haifa, Israel 32809; Golan Levy, (972) 039386444 or (972) 04231252

## ITALY

**Associazione Modellisti Cossato**, via P. Maffei, Cossato 13014, Biella, Italy; Zanellato Romildo, 015-405881; fax 015-922709

## JAPAN

**Courtney Off-Road**, Camp S.D. Butler, Okinawa, Japan, FPO AP 96379; USMC Arts & Crafts, 81-61173-53674

**Foster R/C Raceway**, Camp S.D. Butler, Okinawa, Japan, FPO AP 96379; Camp Foster Arts & Crafts, 81-61173-53674

**Hansen Off-Road**, Camp S.D. Butler, Okinawa, Japan, FPO AP 96379; USMC Arts & Crafts, 81-61173-53674

**Iwakuni R/C Track**, PSC 561, Box 978, FPO AP 96310-0978; David T. Eck, 81-6117-53-3662

**Misawa R/C Raceway**, PSC 76, Box 2946, APO AP 96139-2946; Terry Brancheau, 81-7653-5181 ext. 222-5324

**Yokata R/C Racers**, PSC #78, Box 3619, APO AP 96326, Tokyo, Japan; Victor Giles, 81-0425-52-2511 ext. 225-9025

**Zama Off-Road Raceway**, 17th ASGCM Unit 45013, Box 3232, APO AP 96338 Japan; SFC Ken Campbell, 81-3117-63-8478

## LEBANON

**Wild Willy RCC**, Oscar St-Jal Eddie, Beirut, Lebanon; 00961-1-403751

## MALAYSIA

**Titwangsa Raceway**, Lot 128, Ampang Park, Shopping Centre, Jalan, Ampang, Kuala Lumpur, Malaysia 50450; R.A.C.E. Sdn Bhd., 03-2614496

## MEXICO

**Aices Off Road**, Lopez Mateos y Rayod S/N, Ensenada, Baja California, BC 22830; Jorge Bustamante, 667-6-1476, 61477, 66729

**Baja Jr.**, H. Valdez 151 Pte. Y Gmo. Prieto, Los Mochis Sinaloa 81200; Memo Asencio, Gabby Macias, 681-20276; fax 681-26430

**Club Kyosho de Automodelismo**, Av. Pacifico 216 Coyoacan; Ajusco-Toluca Km 15.3 DE, Mexico 04330; Ing. Jorge Perez Holder, 525-544-08096; fax 525-544-7133

**Dinamo Coca-Cola**, Ruiz Cortines 620 Col. Central de Carga, Guadalupe, Nuevo Leon 67120; Sergio Garza, 83-35-70-0979-32-33

**Hobby Centro**, 12 De Diciembre No. 3070-A, Guadalajara, JAL 45550; Alejandro Ortiz Del Toro, 36-21-46-28

**Hobby's Formula**, Au observatorio 457 DF 01120; 905-502-3620

**Hobby Model's Raceway**, Blvd. Garcia de Leon, 1555, Morelia, Michoacan 58260; 431-5-01-22

**Jaguar R/C Club**, Caiz. Zavaleta 116, Puebla 72150; Chema, Denise or Chiro, 22-31-00-91, 22-33-00-94

**La Hielera**, Prol Corregidora Nte 350, Queretaro, QRO C.P. 76160; Jorge Morelos Rabel, 42-12-15-25

**Pista Casino**, Hotel Casino de la Selva, Cuernavaca, Morelos 16507; Luis Duhart, 73-19-12-38

**R/C Racing Club**, Obsidiana #2900, Zapopan, Jalisco 44560; Fernando Hernandez, 3-616-73-47

**Tony's Track**, Oregon 364 Sur, Culican Sinaloa; Guillermo Prieto, 67-165708-168141

## NETHERLANDS

**H.F.C.C. Hollandia**, De Werf 60, The Hague, The Netherlands; G. de Jong, 031-070-3679820

## NEW ZEALAND

**Capital Model Racers**, Avalon, Lower Hutt, New Zealand; Roger Whitmarsh, 04-566-5714

**Counties R/C Raceway**, Pukekohe Showgrounds, Station Rd., Pukekohe, New Zealand; R. Northcott, 09 23 86904

**Hardware Radio Control Car Club**, 550 Sawyers Arms Rd., Christ Church, New Zealand; Dean Johnson, 09 03 3880 344

**M.A.C. Vlymen**, Hendriklaan 6, Vlymen, Netherlands; Ju Kasteren, 31 73 517906

**Papakura Indoor R/C Car Club**, 25 Tainere Cres., Papakura, Auckland; Colin Perry, 09-298-4711

**Western District R/C Off-Road Car Club**, CNV Bancroft/Akatea Drive, Auckland; Chris, 09-838-5201

## NORWAY

**Aurskog R/C Club**, Aursmoen, 1930 Aurskog, Norway; Tommy Gjeleseth, 47-63-86-21-61

**Dalen Raceway**, P.B. 728, 6401 Molde, Norway; Johnny Reitan, 94 64 52 95

**Hadeland Raceway**, 2750 Gran, Gran Norway; Dag Bakke-Nilsen, 61330405

**Store-Baller Raceway**, 2750 Gran, Gran Norway; O la Raastad, 61330225

## PHILIPPINES

**Boyer R/C Hobby Shop**, Unit No. 10 Lucas Commercial Center, Marcos Hiway, Decembramot, Antipolo, Rizal; Jose "Boy" Chua, 721-2555

**Philippine F1/Touring Club**, Super Mall I, EDSA, Quezon City 1156; Raymond Aguilar/Ron Villalor, 896-64-15/23-30-08

**Philippine R/C Association**, B.F. Homes Paranaque, Metro Manila 1700; Ronald/Manny Villalor, 23-30-08

**Quezon City Radio Control Club**, Quezon City Memorial Cir., Quezon City; Benjie Lumanlan, 731-94-53

## PORTUGAL

**Aero Clube da Madeira**, Rua do Castanheiro E-2, Funchal, Madeira, Portugal; fax 091-221265

## SOUTH AFRICA

**Banana County R/C Racing Club**, P.O. Box 988, Margate, 4275; Dennis Steenmans, 27-0-391-20975

**Gordons Bay R/C Club (GBRC)**, Andrew Norman Sports Centre, Gordons Bay, Cape Province; Andre Hollander, 024-512865

**Helderberg Radio Control Car Club**, De Beers Soccer Club, De Beers Ave, Somerset West, Cape Province; Andre Hollander, 024-51-2865

**Lowveld Radio Control Thunderdrome**, Lion's Club Kanyamazne Rd., Nelspruit, Eastern Transvaal; Martin Van Der Merwe, 01311-534-6415

**Parow Radio Car Club**, Northern Sports Complex, Parow, Cape Province; Stirling Spengler, 021-945-4957

**Phoenix Raceway**, 11 Tugela St., Stillfontein, Transvaal; Lionel Edwards, 018-4842863

**Pietersburg Model Racing**, Landros Marais St., Pietersburg, Northern Transvaal; Peter Van Vuuren, 0152-293-0700

**R.C. Superbowl**, Eisburg Sports Grounds, Eisburg, Johannesburg; Karl Fawcett, 27119076145

**R.A.C.E. Off Road**, Cecil Payne Stadium, Maraisburg, Gauteng; Derrick Plank, 682-2173

**Rustenburg Off-Roaders**, Olympia Stadium, Rustenburg, Northwest Province; Jan Van Vollenhoven, 0142-24-846

**Pretoria Off Road R/C Club**, Joost Bekker Caravan Park, Decemberville, Pretoria, Gauteng; Gert Swart, 012-377-3238

## SPAIN

**ADAM**, Mina Flores de la Sienna, Madrid, Spain Alvaro Sarabia, 01-7471113

**A.D. Diabillios**, Morata De Jalon, 50.260 Zaragoza, Spain; Juan Carlos Vicente de Vera, 34-76-605350

**Club Modelismo Catilla**, P.O. Box 491, Burgos, Spain 09080; A.J. Pereda, 34-47-240130

**Club Social Sevillana**, Crta. Pulianas S/N, Granada, Spain; Oscar Saenz, 958-275282

**Motoclub Castellon R.C.**, Rafalafena, S/N, 12004 Castellon, Spain; Octavio Traver, (34) 64 229705, (34) 64-237411

**Outlaw-Ultima II**, Puerto Rico 27, Madrid, Spain 28016; Juan Vacas, (34) 915197298

**ROARCR**, Naval Station, Rota, Spain (P.O. Box 53, FPO NY NY 09540-0013); PO Kelly Sexton, 34-56-822652

**CRAEM**, La Elipa, Madrid, Spain; Pablo Llorente, 91-3865952

## SWEDEN

**Amalie Racetrack**, Hjort Vagen 14, 5-46632 Sollebrunn, Sweden; Tage Johansson

**PROCAR Speedway**, Industrigatan 8, 430 20 Veddie, Sweden; Lars Nordin, 46-0-340-38784; fax 46-0-340-38694

**Sollenbrunn Mini Racing Club**, Hjortvagen 14, S-446 32 Sollebrunn; Tage Johansson, 46-322-40944

## SWITZERLAND

**E.M.B.C.M. Raceway**, Main Street opposite Police Station, 8854 Siebnen, Switzerland; Markus Schmid, 01-9233621

**ERM Raceway**, 14 Ch de Tavernay, 1218 Grand-Saconnex, Switzerland; M. Maurer, 19-41-22-798-9765

**JMRCV-Terrain Levant**, Chemin ou Levant, 1290 Versoix, Geneva, Switzerland; fax 19 41 22 7790805

## THAILAND

**Bangkok R/C Spa Huamark**, 164/1 Lardprao Soi 96, Wangthonglang Bangkok, Bangkok, Thailand 10310; Mr. S. Sanghavi, 662-931-8390, fax 662-587-1186

**Radio Control Speedway**, 16 Soi Suea-Yai-Uthit, Rajadapisek Rd., Chatujak, Bangkok 10900; Mr. Noppakao and Mr. Suterapong S., (66-2) 541-6398; fax (66-2) 541-6399

## TURKEY

**Mosi-Oa-Tunya**, H9619 Highland Harare, Harare Country, Masloraland, Zimbabwe; 46237

**B&B OTO Güven Raceway**, Gaziosmanpasa Sokak Kadiok, Goztepe Parki, Istanbul, 0216-4186118, or 0216-3490742

## VENEZUELA

**R/C Mariche**, KM4 Zona Industrial, Del Este Via Mariche, Caracas, DF 1070-A; Bruno Morganti, 58-02-241-3969 or 241-4993

**Santa Paula R/C Club**, Polideportivo de Santa Paula urbanization Santa Paula El Cafetal, Caracas, P.O. Box 66886 Plaza las Americas; Isaac Abecasis 02-2423954 or Franco Agrusa 02-4510314

## WEST INDIES

**Island Raceway**, 8 Mile Post Jacks Hill St. Andrew, Jamaica, West Indies; Rodney Littau, (809) 926-7034 or 927-1198

## ZIMBABWE

**Mosi-Oa-Tunya**, H9619 Highland Harare, Harare Country, Masloraland, Zimbabwe; 46237

## Racer of the Month

See your name in lights! OK, maybe not lights, but definitely in print! Send a photo of yourself and your car or truck and tell us where you race (the track must be listed in the Track Directory). If you're randomly picked, your picture will appear in Pro-Line's quarterly Track Directory. You'll also receive your choice of \$250 (retail value) worth of Pro-Line, Protoform and Jaco products from their 1997 catalogue. Enclose a brief bio of yourself, your racing career and your track, and we'll try to make you famous!

Send your entries (please include address and phone number) to:  
Racer of the Month, c/o  
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PRO-LINE



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## Attention Track Owners!

We've updated and expanded our Track Directory—and you can get in on the action! Just complete and return this coupon, making sure the information you give is accurate.

**Remember, it's free!**

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State

Zip

Phone no. (required)

- |                                   |   |   |
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| <input type="checkbox"/> Indoor   | <input type="checkbox"/> Carpet             | <input type="checkbox"/> Automatic lap-counting |
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| <input type="checkbox"/> Off-road | <input type="checkbox"/> Asphalt            |   |
| <input type="checkbox"/> Oval     | <input type="checkbox"/> On-site hobby shop |   |
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## Chris's

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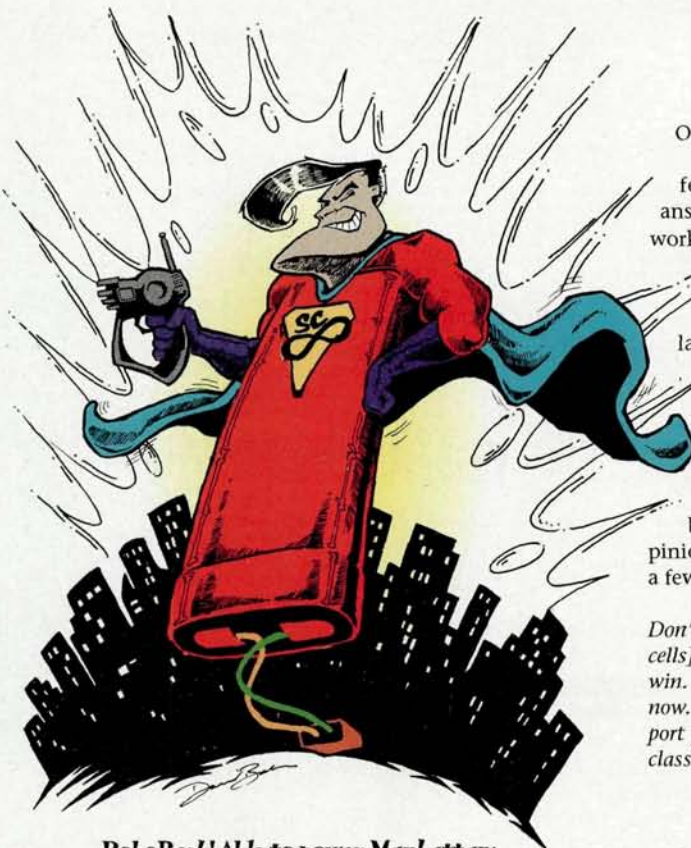
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**RoboPack! Able to power Manhattan;  
imagine what it can do for your RC10!**

### This is my page—mine!

The opinions expressed on this page do not necessarily represent the opinions of the entire Car Action staff. Any resemblance to reality is purely coincidental. Send your correspondence, hate mail, love letters, photographs—anything you like—to Chris's Back Lot, c/o R/C Car Action, 100 East Ridge, Ridgefield, CT 06877-4606. My internet address is: chrisc@airage.com.

## All Amped Up

**T**he new Sanyo 2000 cell has been on the market for a very short time, and already the email pipelines have heated to the melting point with some unwarranted fears and misconceptions. Things like, "I just bought two 1700 packs; did I waste my money?" "Is it true? Do I need these new cells to be competitive?" "Are these the new cells specifically designed for 5-minute heats?" The answer to all these questions is NO! NO! and NO!

One of you postulated: "Chris, if I have more capacity, then it's only logical that I can go up a few teeth in pinion size for more speed." The answer to that is YES! NO! MAYBE! It doesn't really work out quite that neatly. That's kind of like saying, "If I put a larger gas tank on my full-size car, it will go faster." Yeah—sure, if you can also magically make the fuel-injection system pump larger volumes of mixture through the engine faster and do it without causing any extra heat! You see?—not that simple. Remember, larger pinions make electric motors run hotter. Excessive heat is hard on the brushes, hard on the commutator, very hard on magnets and generally compromises efficiency in a big way. So, there is a point at which all a large pinion will give you is shortened motor life. Here are a few other opinions:

*Don't let anyone tell you that you need them [2,000mAh cells] to be competitive in off-road or that they'll help you win. You have more than enough battery than you need now. Those of you who want to spend the bucks, we support your decision and tentatively will provide a new oval class (Pro Expert Modified) just for you.*

J.R. Sitman  
NORCA President

*As long as the 1700 cells are still available, they'll do the job just fine. When the time comes to replace old batteries, then go for the 2000mAh cells, if you want. But please, please, please, do not think of your current packs as suddenly being obsolete.*

Phil Hurd  
ROAR President

Yes, there are a few instances, like on the high banks of a superspeedway, where "re-celling" to 2000mAh will help, but for off-road and parking lot, it's my opinion, and apparently the opinion of a few others, that you shouldn't give it a second thought. So guys, I guess the overall message is don't let yourself get all "amped-up" over this.



**A few views  
from the  
brilliance  
ever present  
on the  
Internet**

I notice that Sanyo is producing the 2000mAh battery to (supposedly) replace the 1700 SCRC batteries. As far as I'm concerned, this is something this hobby does not need.

I can just picture now the politics and b.s. that these new cells will produce. It happened when the 1700 SCE came out, and it's sure to happen again. Why do we need extra capacity? How much faster do we want to go? All this will do is produce a buying frenzy with people rushing out

to buy cells that are untested and unproven in racing. We race here in Australia for 5 minutes and have done so for a long time. The "fast guys" in Mod use the same type of hot winds as in the States (12 turns and below) and still have plenty of battery capacity left at the end of their heats running 1700 SCRCs. What's the point of having 300mAh more?

I would be grateful if you could write an article in your "Back Lot" telling youngsters and novices that they don't need to rush out and buy these new cells just for the hell of it. Time and money would be better spent on practice and tuning.

Chris Gorgioski  
via email

... many of the guys I know who race spec class (5-minute heats) wish they would

race longer mains. You will not need fancy batteries to stay competitive. I have seen guys go with 1400 SCR red cells and still whip a few racers with 1700 black cells. Some even consider 1400 to be an advantage since they weigh less and the average voltage is higher.

A year ago, me and a friend competed at a local 30-minute enduro parking-lot race where the racers were allowed to do battery changes. By properly gearing my RC10LS, we achieved 8+ minutes run time out of my batteries, which are nothing more than old beat-up 1700s. However, the run time combined with decent driving was good for second place. It was the most fun I have had driving R/C cars in a long time.

5 minute + format is the way to go!  
Richard Orobity  
via email